

BEACH (W.)

AN IMPROVED SYSTEM
OF MIDWIFERY***

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AN
IMPROVED
SYSTEM OF MIDWIFERY,

ADAPTED TO

THE REFORMED PRACTICE OF MEDICINE;

ILLUSTRATED BY NUMEROUS PLATES.

TO WHICH IS ANNEXED,

A COMPENDIUM OF THE TREATMENT OF FEMALE AND INFANTILE DISEASES,

WITH

REMARKS ON PHYSIOLOGICAL AND MORAL ELEVATION.

BY W. BEACH, M. D.,

AUTHOR OF "THE AMERICAN PRACTICE OF MEDICINE," CORRESPONDING MEMBER OF THE ROYAL COLLEGE OF
PHYSICIANS AND SURGEONS OF BERLIN, ETC.

"I have heard a voice as of a woman in travail, and the anguish as of her that bringeth forth her first child."—JER. iv. 31.

"Dame Nature is the best midwife in the world. . . . Meddlesome midwifery is fraught with evil. . . . The less done generally the better. . .
Non-interference is the corner-stone of midwifery."—PROF. GILMAN.

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1847.

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TO
THE MEMBERS OF THE REFORMED SCHOOL OF MEDICINE OF THE UNITED STATES,

AS A TRIBUTE OF ESTEEM

FOR THEIR HUMANE AND ZEALOUS EFFORTS TO PROMOTE THE CAUSE OF

MEDICAL REFORMATION,

This Work

IS RESPECTFULLY INSCRIBED BY THEIR FRIEND AND COADJUTOR,

W. BEACH, M. D.

AUTHORS REFERRED TO IN THIS WORK.

- | | |
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| <p>MOREAU's Practical Midwifery; eighty plates.
 Denman's Introduction to the Practice of Midwifery.
 Rigby's System of Midwifery.
 Ramsbotham's Principles and Practice of Obstetric Medicine and Surgery; illustrated with one hundred and forty-five figures.
 Campbell's System of Midwifery.
 Lee's Lectures on the Theory and Practice of Midwifery.
 Maygrier's Midwifery.
 Blundell's Lectures on the Practice of Midwifery.
 M. Chailly's Practical Treatise on Midwifery.
 Dewees' Compendious System of Midwifery.
 Meigs's Philadelphia Practice of Midwifery.
 Hamilton's Outlines on the Theory and Practice of Midwifery.
 Spence's System of Theoretical and Practical Midwifery.
 Maubray's Complete Female Physician.
 Bard's Compendium of the Theory and Practice of Midwifery.
 Murphy's Lectures on Natural and Difficult Parturition.
 Collins's Practical Treatise on Midwifery.
 Gooch's Lectures on Practical Midwifery.
 Severn's First Lines on the Practice of Midwifery.
 Maunsell's Dublin Practice of Midwifery.
 Maunsell's London Practice of Midwifery.
 Daventer's Art of Midwifery Improved.
 Mervis's Midwife's Pocket Companion.
 Madame Boivin's (late chief midwife to the Maternity Lying-in Hospital, Paris) Art of Midwifery; with plates. Untranslated.
 Moreceau's Mother's Book.
 Ewell's Letters to Ladies.
 Smellie's Treatise on the Theory and Practice of Midwifery; three volumes.
 Waller's Elements of Practical Midwifery.
 Reid's Manual of Practical Midwifery.
 Aaten's Manual of Practical Obstetrics.
 Warrington's Obstetrical Catechism.
 Ludlow's Manual of Examinations.
 Mendenhall's Student's Vade Mecum.
 Chavasse's Advice to Wives on the Management of themselves during the Periods of Pregnancy, Labor, and Suckling.
 Denman's Aphorisms on Practical Obstetrics.
 Brevit's Female Medical Repository.</p> | <p>Howard's Midwifery.
 Hersey's Woman's Friend.
 Comfort's Midwifery.
 Churchill's Diseases of Females.
 Gooch on the Most Important Diseases of Women.
 Blundell's Observations on some of the more Important Diseases of Women.
 Lever's Prize Essay on the Organic Diseases of the Uterus.
 Manning's Treatise on Female Diseases.
 Evanson and Maunsell's Practical Treatise on the Management of the Diseases of Children.
 Billard on the Diseases of Infants.
 Combe on the Physiological and Moral Management of Infancy.
 Mrs. Barwell's Infant Treatment, with Directions to Mothers.
 Ackerly on the Management of Children in Sickness and Health.
 Underwood on the Diseases of Children; three volumes.
 Heberden's Epitome of the Diseases Incident to Children.
 Parr's Medical Dictionary.
 Cyclopædia of the Arts and Sciences.
 Dungleson's Physiology.
 Roget's Outlines of Physiology and Phrenology.
 Richerand's Physiology.
 Blumenbach's Physiology.
 Carpenter's Manual of Physiology.
 Cruveilhier's Anatomy.
 Wilson's Human Anatomy.
 Masse's Anatomical Atlas; one hundred and twelve engravings.
 Cyclopædia of Popular Medicine.
 Chitty's Medical Jurisprudence.
 Williams's Catechism on Medical Jurisprudence.
 Beach's American Practice.
 Dungleson's Practice of Medicine.
 Heberden's Commentaries.
 London Medical Pocket Companion.
 Dixon on the Diseases of the Sexual Organs.
 Smith's Botanic Physician.
 Spratt's Illustrated Atlas.
 Lizar's Anatomical Plates.
 Kennedy on Auscultation during Pregnancy.
 Manuscript Notes of Professor Gilman's Lectures.</p> |
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P R E F A C E

SOME years ago, I announced to the public my intention to issue a treatise on MIDWIFERY, adapted to the reformed practice of medicine. I am at length gratified in being able to redeem my promise, and to lay before the reader the contemplated work. How far it will answer the expectations of my friends, I know not. I do not flatter myself that the work is altogether perfect; but if some inaccuracies are discovered, I feel confident that the general principles inculcated will be found correct and reliable, as I have labored more to accomplish this object than to embellish the volume in other respects. I have, in a word, endeavored to make it a practical work—a safe guide to the physician, midwife, and student.

The importance of a more correct knowledge of this branch of medical science, and of a practice more in accordance with the process of Nature, will not now be called in question by any who are either acquainted with the magnitude of the subject, are concerned for the well-being of society, or are familiar with the many abuses which have been practised by the prevailing system under the garb of science. Many volumes have been written upon this subject by the mineral or depletive practitioners of medicine, and others; but there are none adapted to the peculiar principles of the reformed system. A reformation, therefore, in this branch, is imperiously required. There are many very valid objections to the prevailing system of midwifery, as taught in our colleges, and practised by the generality of physicians. Their treatment before, at the time, and after delivery, is injudicious, injurious, and not unfrequently fatal, as may be proved by their own reports of cases published in their medical periodicals, and by daily observation. It consists principally of bleeding, mercury, untimely and improper interference, and the frequent and needless use of instruments, &c., &c.

How many cases of mal-practice are from time to time communicated to us from different sources of obstetrical history! Some attempt has been made to reform these abuses by Thomsonian writers; but no one of their works on midwifery that I have seen is either in accordance with science or the result of experience: they inveigh against interference with the efforts of Nature, yet are always interfering by “courses of medicine,” “composition,” Cayenne-pepper, or some other stimulating agents, which are all usually unnecessary, and frequently as injurious as the treatment against which they so loudly protest, as all judicious practitioners are aware. With this state of things before us, there seems a fair field open for improvement in this branch of medical science.

It will be perceived, by reference to the list of writers on another page, that I have examined a great number of authors on this subject, both ancient and modern; and every rule and sentiment of any value I have embodied in this work. Some of these authorities have recently appeared, and are scarcely known in this country; they display great research and much clinical experience; and our practice being essentially “eclectic,” I have adopted everything really useful from every source within my reach. I think,

then, that I may state, without any desire of ostentation, that these advantages, together with my own experience of a long series of years in the active duties of my profession, enable me to offer a work which may be relied upon as authority in the lying-in chamber, and which I am confident will not disappoint the expectation of the friends of reform. The student will perceive, as he peruses this volume, that I have endeavored to carry out the principles inculcated in the motto on our title-page, namely, that "*Dame Nature is the best midwife in the world . . . meddling midwifery is fraught with evil . . . the less done, generally the better . . . non-interference is the corner-stone of midwifery;*" and all who will adopt it will, I am confident, find their practice crowned with eminent success.

I have taken great pains to procure good illustrations, and have obtained them from various sources: some have been copied or reduced from other large engravings, and others have been copied by Mr. MEYER, a distinguished artist, from preparations in my anatomical museum, most of which I have imported from Europe (and I believe a better or more diversified collection is not to be found in this country). These I consider very important: the student is enabled by their aid to acquire a knowledge of the science with much greater facility, as all impressions made through the eye are more deep, lasting, and interesting, than those produced in any other manner. I have therefore endeavored to convey the knowledge of obstetrics to the mind through the eye, as well as through the perceptive faculties, so that the student may understand the subject either by the plates or by the text; but the study of both together, with ordinary attention, will render a knowledge of it pleasing and easy to all who may desire it.

We rejoice that a new era in the science of obstetrics, or the art of midwifery, is about to dawn on the world, after being so long enveloped in mystery by the votaries of science, falsely so called, and which has proved so fatal to thousands, either by wrong medical practice, improper interference in labor, or the use of instruments; and that it is about to emerge from this chaotic state, and to be elevated to a more exalted standard of usefulness, which will, we trust, ere long, emancipate the female sex (the most interesting portion of the human family) from the evils and abuses under which they have so long suffered.

I must not forget to add that I am indebted to Dr. J. HASSELL, who has acted as my amanuensis, and who is associated with me in practice, for many very valuable hints and suggestions, which I consider of great benefit to the work; and I take this opportunity of observing that Dr. Hassell is a very competent teacher and practitioner of midwifery, and also of the reformed practice of medicine generally.

I have prepared this work, as I have all my others, under such great disadvantages, occasioned by so many engagements and interruptions, that I have not been able to devote more than one fourth of the time to it that I should, had I been differently situated.

I have had numerous applications for the different medical works which I have promised, namely, an Improved System of Midwifery; the Treatise on Anatomy; the Medical Dictionary; and the Medical Reformer. The first is now published. For the second, on Anatomy, I have some thirty plates ready; and, for the Reformer, I have most of the matter prepared. I hope, therefore, to have them all published at no distant period. I intend that these works, when completed (with those already issued, with revision), shall form a complete library on medical reform, as follows: 1. American Practice, in two volumes. 2. The Family Physician. 3. An Improved System of Midwifery. 4. A Treatise on Anatomy and Physiology. 5. Medical Dictionary. 6. Medical Reformer. 7. History of the Reformed Practice of Medicine.

I have received the following communication from a distinguished physician of the "old school" (Dr. JOSEPH WARRINGTON, of Philadelphia), propounding the following questions, with a view, no doubt, to correct and improve the present practice of midwifery. The information the gentleman requires he will find in the present volume, to which I respectfully refer him:—

"DEAR DOCTOR: Believing that a free interchange of useful knowledge among the intelligent members of the medical profession, is earnestly desired by those who are engaged in collecting and arranging facts for the promotion of science, I have taken the liberty to address you, as among the number of physicians who are experienced in all the departments of obstetric medicine, the following questions, viz. :—

- "A. At what age do the female children of American, English, German, French, Irish, Indian, and Negro residents in your vicinity commence and cease to menstruate?
- "B. Do your observations confirm or refute the doctrine of Negrier, Paterson, Jones, Pouchet, Raciborski, Bischoff, and others, on the vesicular or ovular origin of the catamenia?
- "C. 1. Are the women under your care subject to many disturbances of the catamenial function? 2. Deficient? 3. Excessive? 4. Painful and difficult menstruation? 5. How, and with what success, do you treat these several varieties of disorder?
- "D. 1. Are organic diseases of the uterus of frequent occurrence? 2. What are the varieties? 3. At what age, and under what circumstances, do they occur? 4. What is your treatment of engorgements, congestions, inflammations, acute and chronic, ulcerations, simple and cancerous, of the womb? 5. Of inflammation, acute and chronic, of the ovaries, and Fallopian tubes? 6. Dropsy of the ovaries, or uterus? 7. Do you meet with any cases of physometra? 8. What is your mode of diagnosing either of the several affections above named?
- "E. 1. Are mammary diseases of non-pregnant women common? 2. What is their character? 3. How, and with what success, are they treated?
- "F. 1. At what age do women usually marry? 2. At what period of life do they begin to reproduce? 3. Are diseases of the ovum common? 4. What are they? Hydatids, amorphous moles, monsters by excess or defect of development? 5. Have you met with any case in which either limb of the fœtus has been constricted or amputated in utero by the coils of the umbilical cord?
- "G. What effect does pregnancy usually have upon women?
- "H. Do you know any mode of treatment by which the development of the fœtus in utero can be diminished or increased?
- "I. Are you familiar with any plan by which the pains of parturition can be diminished, and the delivery expedited safely?
- "K. 1. What arrangements do pregnant women usually make for their lying-in? 2. Do physicians take the entire charge of the case, or is it left to females altogether?
- "L. 1. What are the usual practices of patients during the several stages of labor, as regards positions of the body? 2. What posture would they naturally assume in the second and third stages?
- "M. 1. What rules of conduct do you impose upon patients, in regard to position and dress, during the first stage? 2. What in reference to their persons and beds during the second and third stages?
- "N. What is the usual duration of each of the three stages?
- "O. 1. In what proportion of cases is manual or instrumental interference found necessary? 2. Have you any rule as to *time* in which you have recourse to manual or instrumental assistance? 3. Do you use *ergot*? 4. Under what circumstances? 5. With what effect?
- "P. 1. Have you any rule for the choice of the hand with which to operate in rectifying a deviated position of the head? 2. To make version by the feet, in arm or shoulder presentations? 3. Is the value of such a rule tested by actual experience?
- "Q. 1. In what proportion of cases which have come under your care did you find it necessary to use the forceps? 2. The blunt-hook? 3. The crotchet?
- "R. 1. What kind of forceps, perforator, or crotchet, do you use? 2. What position for the patient do you deem the best for manual or instrumental delivery?
- "S. 1. What number of your obstetric patients become subjects of accidents arising from the pregnant, parturient, puerperal states? 2. Are hæmorrhages, convulsions, metritis, metro-peritonitis, pure peritonitis, of a common occurrence? 3. How do you treat the several diseases above named? 4. With what success?

- "T. 1. What is your observation in reference to the completion of the third stage of labor? 2. How much time do you think it usually requires for the spontaneous delivery of the placenta? 3. What is your practice in reference to delay or assistance in this matter? 4. Do you stimulate the womb to action by frictions upon the hypogastrium? 5. Do you draw upon the cord? 6. Under what circumstances do you insert a portion or the whole of a hand into the uterus for the withdrawal of the secundines? 7. Can you give me any statistics as to the relative number of cases in which the placenta is *retained*? 8. In which it is adherent? 9. Your mode of completing delivery in the former case? 10. Your treatment of the latter, and its success? 11. Are you assured that it is *necessary* to *withdraw* the placenta, when it is found to be *adherent*? 12. What is your experience of the results of cases in which the mass is stripped or peeled off? 13. Those in which it has been allowed to *remain attached*? 14. Has experience taught you that in *hour-glass* contractions of the womb upon the placenta, you ought or ought not to use prompt measures to overcome such contractions and secure the speedy delivery of it? 15. What means do you use, and with what success? 16. Have you permitted the womb to remain undisturbed, and with what results?
- "U. 1. Have you any careful observations respecting the lochial discharge? 2. Its amount every twenty-four hours? 3. Its change in color, &c., in the same periods? 4. The time of its cessation?
- "V. 1. What is the practice respecting the time of placing the child at the breast? 2. What do you know in favor of this practice? 3. Are mammary engorgements common? 4. Are they sanguineous or lactiferous? 5. How, and with what success, do you treat them? 6. Do you know of any ill consequences resulting from nursing very much and very long? 7. What are they?
- "W. 1. How many women within your knowledge suffer from the soreness of the mouth only during pregnancy or nursing? 2. Do you know of any treatment adapted to the speedy cure of this affliction?
- "X. 1. What have you observed tending to prove that original vaccination is prophylactic of small-pox, when well performed? 2. What do you know to establish the fact that revaccination is mostly, or even occasionally, necessary? 3. How often should it be repeated?
- "Y. 1. How long do you usually continue obstetric cases under your care? 2. How much service do you render on the occasion? 3. What fee do you require?
- "Z. 1. Are good monthly nurses readily to be obtained? 2. What is the amount of their weekly compensation? 3. Do you believe any benefit would be derived to patients and their families by the employment of intelligent, well-educated, companionable women, as monthly nurses, and to take care of the sick generally, under the direction of judicious physicians?

"I am, respectfully, &c.,

"JOSEPH WARRINGTON, M. D.

"229 VINE STREET (*Franklin Square*), PHILADELPHIA, May 1, 1846."

I have introduced the above letter in this connexion, for the purpose of showing the distrust and desire for improvement in midwifery among the more enlightened and progressive physicians of the "old school," and which proves, more conclusively than any language which I can employ, their extreme want of confidence in the science of obstetrics as taught by their own standard authorities.

That the system of midwifery, as exhibited in the present work, will tend in some measure to supply existing deficiencies, and meet the wants of the friends of medical reform generally, is the sincere and ardent desire of

THE AUTHOR

NEW YORK, November 1, 1846.

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EXPLANATION OF PLATES.

PLATE I.....PORTRAIT

PLATE 2.....FRONTISPIECE

Fetus in utero, painted from the magnificent female wax figure placed in the centre of the obstetric room of my Anatomical Museum.

PLATE I.....PAGE 22

Dissection of the American Aloe, or Century-plant: fig. 1, A, the seed; 1, B, germen magnified to show the seeds, which are removed one side; 2, transverse view of the germen; 3, pistil; 4, anther and filaments enlarged: one side discloses the farina; 5, first stage: petals closed; 6, second stage: anthers shooting; filaments curled downward; 7, third stage: filaments taking their position; 8, fourth stage: filaments erect; 9, fifth stage: pistil peeping; 10, sixth stage: pistils nearly the height of the stamens; flower in perfection; 11, seventh stage: impregnated pistil elongated; stamens drooping; 12, eighth stage: all except the germ decayed; 13, front view, to show the stamens, &c.; 14, back view; 15, the Century tree or plant complete.

PLATE II.....p. 24

Fig. 1, flower of the Hyosamus or Henbane; 2, back view of one of the stamens, as seen through the microscope; 3, a stamen or male part of the flower, natural size; 4, anther magnified: front view closed; 5, its two compartments opened, and unfolding the farina or seed; 6, pistillum, or female part of the flower, natural size; 7, the pistillum, as seen with the microscope.—Fig. 8, flower of the Mesereon, natural size; 9, the same, magnified; the eight stamens attached to the corolla by short filaments: the pistil in the centre like a bottle: the swollen part, A, being the vegetable womb.—Fig. 10, drawing of the common wild Lily (flower in perfection), which I brought from the country, and had figured, to show the stamens with the anthers attached, filled with the farina, a yellow fructifying dust, and also the pistil in the centre; 11, the pistil, which I laid open, and discovered the pollen or seed in the centre passing down to the germ or womb (these specimens were seen clearly and to great advantage); 12, a portion of the same flower.

PLATE III.....p. 28

Incubation of the Egg. This plate illustrates the cluster of eggs found in the common fowl, A, in which are a great number of all sizes: one entering the oviduct, and one is seen at the moment of the passage; B, the egg in its natural state; fig. 1, its appearance after having been under the fowl one day, and thus on up to the twenty first day, or until the time of bursting the shell.

PLATE IV.....p. 29

The same: successive development.

PLATE V.....p. 30

The same.

PLATE XII.....p. 32

MALE ORGANS: 1 2, body of the testicle; 3, prostate gland; 4, vesiculae seminales or seminal bag; 5, bulb of the urethra; 6, glans penis; 7, corpus or body of the penis; 8, prepuce; 9, tunica vaginalis testis; 10 corpus cavernosa.

PLATE XIII.....p. 35

This plate represents the womb and its appendages (natural size), a front view of the unimpregnated uterus and its appendages, with a section of the upper part of the vagina: 1, vagina open; 2, mouth of the uterus; 3 3, round ligaments; 4 4, broad ligaments; 5, body of the uterus; 6 6, Fallopian tubes; 7 7, fimbriae; 8 8, ovaria.

PLATE XIV.....p. 36

The same, with the uterus open.

PLATE XV.....p. 37

FEMALE ORGANS: 1, mons veneris; 2, labium externum; 3 nymphæ; 4, perineum; 5,

rectum; 6, clitoris; 7, opening of the urethra or urinary canal; 8, mouth or opening of the vagina.

PLATE XVI.....p. 38

Represents an injected uterus at the full period of pregnancy, half its natural size: intended to illustrate the enlarged size of the vessels, their distribution, and union with each other.

PLATE XVII.....p. 61

Fig. 1, profile view of a female in the fifth month of pregnancy, the other, A A, the full period (nine months), with a full grown fetus in utero presenting in the natural position.

PLATE XVIII.....p. 54

Virgin state; womb vacant; the form, symmetry, and integuments, demonstrated.

PLATE XIX.....p. 52

The viscera or internal organs, drawn from my anatomical female figure: 1, heart; 2, lungs; 3, stomach; 4, liver; 5, ovaria; 6, uterus; 7, bladder.

PLATE XXI.....p. 91

Male and female pelvis, half size of nature.

PLATE XXII.....p. 92

Fetal skeleton articulated

PLATE XXIII.....p. 93

Bones of the fetal skeleton disarticulated.

PLATE XXIV.....p. 120

Uterus at the full period of pregnancy, with a finger in the os, which is a little dilated, to show the first stage of labor and examination. (In the beginning of labor, it is best to examine with the middle finger of the right hand.)

PLATE II and XXXIV

Shows the woman in the best position (on the back) for delivery.

PLATE XXVI.....p. 125

Section of the left side of the female pelvis with its contents, the upper portion of the left thigh, nates, &c.; the uterus at the full period of gestation, before labor has begun; the orifice of the womb, now lying high up, not dilated, the finger in the vagina, in the act of examination.

PLATE XXVII.....p. 122

Section of the pelvis, showing the child in the act of parturition: the head has advanced into the brim of the pelvis diagonally, with one ear inclined toward the right groin, and the other toward the junction of the sacrum and ilium: the most favorable position for passing through the upper chamber of the pelvis.

PLATE XXVIII.....p. 123

The same, further progression; head turning and advancing.

PLATE XXIX.....p. 126

The womb at the full period of gestation and commencement of labor: the bag of waters, which envelops the infant, is forced through the orifice of the uterus by its contractions, and appears in the form of a tumor or cyst.

PLATE XXX.....p. 123

Further progress of the child toward delivery: the head in the cavity of the pelvis, the forehead in the hollow of the sacrum, and the occiput passing under the arch of the pubes; the right hand of the accoucheur may support the child in its passage.

PLATE XXXI.....p. 127

Head delivered

PLATE XXXII.....p. 56

Front view; progressive development of the fetus: 1, the embryo at two or three months of age; 2, embryo at five months, with placenta attached to the uterus; 3, fetus in utero at eight months, with the surrounding organs—breast, stomach, liver, intestines, &c.

PLATE XXXIII.....p. 129

Body delivered.

PLATE XXXIV.....p. 130

Separation of the child from the mother: pla-

centa retained, connected by the cord, mode

of severing the cord, one inch from the body.

PLATE XXXV.....p. 131

Fetus and viscera, fetal side of the placenta and cord.

PLATE XXXVI.....p. 139

Face turned upward: a tedious and painful labor, but not requiring instruments.

PLATE XXXVII.....p. 145

Breech presentation: delivery accomplished without change of position, or the use of instruments, but very painful

PLATE XXXVIII.....p. 147

Arm presentation, hand seizing the feet in the act of turning, but not always necessary.

PLATE XXXIX.....p. 144

The feet brought down: in this case the face must be kept turned to the sacrum or spine.

PLATE XL.....p. 149

The body of the child partly delivered, and grasped by the accoucheur's hand.

PLATE XLI.....p. 150

The body delivered, and the operator's hand bringing down the arm of the infant.

PLATE XLII.....p. 156

Mode of extracting the retained placenta.

PLATE XLIII.....p. 157

Retention of the placenta by irregular uterine contraction, called the hour-glass contraction.

PLATE XLIV.....p. 163

Cord and placenta presenting.

PLATE XLV.....p. 174

Twins, in separate cavities or membranes.

PLATE XLVI.....p. 179

The mode of applying the left-hand blade of the forceps to the head.

PLATE XLVII.....p. 176

Applying the second blade of the forceps.

PLATE XLVIII.....p. 177

Both blades of the short forceps introduced, locked, and placed against the perineum.

PLATE XLIX.....p. 178

The head more advanced: the occiput emerging from under the arch of the pubes; also the first action of the forceps after locking—made by bringing the handles, firmly grasped in one or both hands, slowly toward the pubes.

PLATE L.....p. 179

Embryotomy: the female on the back, with the left hand of the accoucheur in the vagina, guiding the point of the perforator.

PLATE LI.....p. 179

Second stage of embryotomy: the instrument penetrating the brain.

PLATE LII.....p. 179

Third stage of embryotomy: the instrument having made a small opening in the head.

PLATE LIII.....p. 179

Fourth stage of embryotomy: section of the parts; the crotchet in the opening of the cranium, with the left hand of the operator in the vagina, to guard against laceration. A very rare case to require this horrid operation.

PLATE A.....p. 62

Illustrations of the origin and development of vegetable, animal, and human life.

PLATE B.....p. 46

1, situation of the neck of the womb in different periods of pregnancy; 2, muscles of the uterus; 3, mammary gland; 4, tumor of the womb; 5, falling of the womb; 6, turning the child; 7, fimbriae grasping an ovum.

PLATE C.....p. 95

1, deformed pelvis; 2, section of the sacrum; 3, section and angle of the sacrum; 4, sacrum and fetus in utero; 5, placenta, fetal surface; 6, the same, maternal surface.

PLATE D.....p. 71

Figures of various kinds of monsters

The other figures and plates of the work are explained in their appropriate places.

IMPROVED SYSTEM OF MIDWIFERY.

PRELIMINARY REMARKS.

· DEFINITION OF MIDWIFERY.—By the term midwifery, we understand the act of superintending and assisting nature, during parturition or child-birth; and in a more extended sense, it implies the treatment of female and infantile diseases.

HISTORY OF MIDWIFERY.—This branch of medicine must have been coeval with the formation of society. The knowledge of it was, no doubt, first acquired by experience, and that probably induced by observing the phenomena of labor in the brute creation.

In the early ages of the world, women *alone* officiated in child-birth. From the Scriptures, it appears that, among the Jews, the practice of midwifery was exclusively confined to females. Common history also informs us that this same practice prevailed among the ancient nations of Greece and Rome. In fact, we have no account, in the history of any nation, of men ever officiating in child-birth, except in some desperate cases, until the sixteenth century.

Previous to the above century, very few treatises had ever been published, either by physicians or midwives, on this subject; from which fact we infer that the practice must have been principally, if not altogether, empirical.

Hippocrates was the first who wrote on this subject, of which we have any knowledge; he flourished about four hundred years before the Christian era. This work was the chief guide of midwives until the sixteenth century—after the revival of learning, and the invention of the art of printing—which comprises a period of two thousand years.

The first work on midwifery ever printed in the English language was published in London, by Dr. Raynald, in the year 1540. It was originally published by him in Latin; and it had been translated into Dutch, French, Spanish, and other European languages. “It was called ‘The Woman’s Book; or, the Garden of Lying-in Women and Midwives.’ He enjoins that ladies and gentlemen do have this book on their hands, and that they cause such parts of it as are applicable to be read before the midwife and the rest of the women present at the labor, whereby, he says, the laboring woman may be greatly comforted and alleviated in her travail.”

In 1665 another work was published, by Ambrose Pare, a French surgeon, who was the first that recommended the operation of turning the child, and delivering by the feet, in all cross presentations. This may be considered the first recorded improvement in midwifery since the time of Hippocrates, two thousand years before.

About the beginning of the seventeenth century, we have the first undisputed work written by a female on midwifery—Loueiza Brewster, a pupil of Ambrose Pare. She wrote on sterility, abortions, fertility, child-birth, and diseases of women and newborn infants.

During the sixteenth century, the forceps were invented by Dr. Chamberlain, in England, which for many years he kept a secret, and obtained great reputation by their use in difficult labors. Dr. John Maubray was the first public lecturer on midwifery in England; he lectured in his own house, in Bond street, London. I have before me this work. In 1723 he published a work on midwifery, in which he exclaims with great vehemence against the use of the instruments invented by Dr. Chamberlain, which had now become pretty generally known.

All those who may be desirous to learn with what temerity the art of midwifery was practised, both manual and instrumental, in that day, may read the work of Dr. Burton, of York, England, whose practice has been consecrated to the ridicule of after-ages, by the pen of Sterne.

Shortly after this time, in the year 1760, there appeared a treatise on the "*Art of Midwifery*," setting forth its various abuses, especially in the use of instruments, written by a Mrs. Elizabeth Nihell, professed midwife. It was addressed to all fathers and mothers, and those likely soon to be either. The avowed object of the book was, to inculcate a preference of women to men in the practice of obstetrics. Nothing can exceed the vehemence of her invective against male attendants. There is, she observes, "a curse that attends their operations; for difficult and fatal labors have never been so rife or so frequent as since their intermeddling. The cruelty of Herod," she adds, "extended to no more than to infants—not to the mothers; but that the cruelty of these pretenders extended to both." There can be no doubt but that her abuse was mainly directed against Smellie, Burton, Mackenzie, and Hunter, as among the most extensive practitioners of midwifery in that day.

Dr. Shippen, of Philadelphia, was the first public lecturer on midwifery in the United States. His first course was delivered in 1762, and it was attended by only ten pupils; but he lived to lecture to a class of two hundred and fifty.

A Dr. Atwood was the first in the city of New York who had the confidence to advertise himself as a man-midwife, which he did in 1762.

Dr. Bard, born and educated in Europe, came to this country and established himself in practice in New York, and was chosen the first president of the first medical college founded in this state. He was a judicious practitioner, and he wrote a practical treatise on midwifery, for the use of midwives and students. I believe it was the first published in this country, and it was the best that has been published. But it has fallen into disrepute, in consequence of his placing too much reliance on the resources of nature, to suit the officious meddlers of the day. I remember this venerable old physician, bending with age and infirmity (when I attended lectures in the old university of the state of New York, in Barclay street), coming in and taking his seat by the side of Professor Hossack, and calling our particular attention, in a very feeble tone of voice, to some facts connected with the subject on which the professor was lecturing. His hoary locks and profound attainments excited among us a universal veneration.

According to Astruc, the dutchess of Villiers, mistress to Louis XIV. of France, was the first female who was induced to place herself under the exclusive obstetric care of a professor of surgery, without any anticipated necessity of a surgical operation. This took place in 1663; and the surgeon, Julian Clement, was conducted in disguise to the dwelling of his patient. The case terminated favorably, and he was soon after appointed accoucheur to the princess of France. The example thus set spread rapidly among the aristocracy of France, and was imitated by other nations, until at length it has spread through every rank of civilized society.

So indecent did it appear, before this time, for a man to be present at an ordinary labor, that one Dr.

Vites, of Hamburg, whose curiosity was greater than his judgment, was publicly branded for being present at one in female attire. Another writer states that he was condemned to the flames.

About this period, when man-midwifery was first practised in France and England, many books were written on this subject, purporting to contain improvements; and although some judicious treatises have been written, and some improvements made, among which that by Dr. Denman is the best in the English language—although there are many more recent authors, such as Campbell, Ramsbotham, Lee, Blundel, Gooch, Murphy, Collins, &c., who display great learning and research on particular subjects in midwifery—yet, according to the testimony of judges, in consequence of the rash and untimely interference on the part of the accoucheur, together with the improper medical treatment, and the very frequent use of instruments, there has been and now is more injury to the children and to the organs of the mother, and more fatal cases, than there ever were before the light of science and literature began to dawn, when the practice was exclusively confined to the female sex. And even at the present day, there is no part of medicine which in this respect needs a *reformation* more than does the practice of midwifery, although some of the most celebrated practitioners of modern times are females: among whom have been Madame Boivin and Madame La Chapelle, whose treatises on this subject are quoted as authority by our best English and American male practitioners. These ladies have delivered over twenty thousand each, and have very seldom resorted to the use of instruments in delivery. Their success has been unparalleled in ancient or modern history. And in this country there are numerous others, also, among whom may be mentioned Mrs. Alexander, of Boston; the late Mrs. Stebbins, of Massachusetts; Mrs. Halsey, Mrs. Haynes, and Mrs. Russell, of this city, and numerous others—all of whom have been remarkably successful, and an honor to their profession.

WHO SHALL OFFICIATE IN PARTURITION?—In consequence of the practice which prevails in the present day, this has become a grave question. The physician contends with much zeal that it is his province to officiate. Females, he alleges, are incompetent. And these assertions of physicians have influenced the minds of females to such an extent, that they are forcibly impressed with the belief that there are no others competent; and when it is proposed to many women to employ a midwife, they appear to shrink with horror: and many even suppose that in trusting themselves to the most accomplished female accoucheur, they jeopard their lives. The confidence of the females in the physician is so great, that it is almost impossible to effect a reformation in the prevailing practice in this respect.

The physician takes it for granted, and even boasts, that if he can attend one single case of midwifery in a family, he has ever after secured their patronage; so that both interest and prejudice operate as obstacles and barriers to any improvement or change in the practice. And although the most fearful consequences have and are still daily occurring, modern females cling to this unnatural practice.

Notwithstanding, however, the existence of the above obstacles, we are well assured that females, if rightly qualified, are not only as fully capable as men, but are even more so; and therefore the most valid and conclusive reasons may be assigned why a reformation should take place in this department of the practice. What more conclusive than the fact of the actual attendance of women in child-birth in all nations previous to the sixteenth century, and the attestation of competent persons, during the first century of man-midwifery, to the fact that not half so many fatal cases occurred before as after the innovation? And in the first settlement of this country, when females attended exclusively on such occasions, it was as rare a fact to hear of a woman perishing in child-birth as it is now to hear of an Indian or an animal perishing in labor, who are delivered by the unaided powers of nature.

But in this age it is quite common to hear of persons who die in child-birth, or from some of its consequences: either bleeding before, mal-practice at the time, or the subsequent use of some poisonous minerals. The advantages therefore vastly preponderate in the employment of females.

The objections to employing men are various and weighty, among which I would enumerate the following:—

1. The practice has an immoral tendency. The great intimacy and confidence which exist between

the physician and the patient, gives the most unbounded liberties and temptations to the unprincipled and licentious to alienate their affections from their husbands.

2. It is indelicate for men to attend on such occasions.

3. The hands of men are larger, and are therefore less calculated to manipulate when such practice is necessary.

4. The presence of a man gives such a shock to the nervous system of some women in labor, as to arrest the pains, and sometimes completely to suspend them; and exerts a baneful and serious influence on the result. It was this, it is said, which proved fatal to the princess Charlotte of England.

5. Men have less sympathy on these occasions than women. A woman who has borne children has certainly more sympathy for the sex than the male can have; besides, women have more patience and perseverance than men. A female, when properly instructed, possesses a tact and adroitness in rendering assistance in the hour of nature's peril, which is unequalled by the male.

6. Their whole time being devoted to this one branch of medicine, would render them greater proficient in the art than the general practitioner can attain.

7. This part of the practice rightly belongs to females, and it would give employment to many virtuous and highly-deserving widows and others, who would be very useful to their sex, and obtain a good living, who are now deprived of these advantages by the prevailing practice. As evidences of the capability and great success of women in this department, we need only refer to Madame Boivin, Madame La Chapelle, and others, in all parts of the world, named before. Dr. Ewell, in his "Letters to Ladies," has the following remarks on this subject:—

"The serious object of my present solicitude is, to wrest the practice of midwifery from the hands of men, and to transfer it to women, as it was in the beginning, and ever should be. I have seldom felt a more ardent desire to succeed in any undertaking, because I view the present increasing practice of calling on men in ordinary births as a source of serious evils to child-bearing; as an imposition upon the credulity of women, and upon the fears of their husbands; as a means of sacrificing delicacy, and consequently virtue; as a robbery of many of the good common women of their proper employment and support. Truly it shows as extraordinary a revolution in practice as any afforded from a survey of all the arts. That all females do bring forth their young without assistance, excepting the human in a state of civilization, and that women should call for the assistance of men—the only animals tormented by jealousy—is a fact that will scarcely be credited in a Turkish harem, or by the Christians of some future and purer age. Should the strangers to the practice inquire if our men have large, unwieldy hands—great curiosity about women; should they ask if our women had the requisites for useful services—small hands, good sense of touch, and patience in attendance—they will absolutely deny this monstrous perversion of the course of nature.

"From the peaceful and retired occupations of women, they are generally more numerous in the community than men. Nevertheless, the men have assumed several offices properly belonging to the weaker sex. The natural consequence is, that many women—as men in similar circumstances—wanting profitable occupation, seek the employments of the vicious. Inasmuch, therefore, as these men-midwives have meddled with this proper business of women, they have been instrumental in the depravity of many. Indeed, it is owing to their acting where they are not required, that the female practitioners are so often ignorant—not having the opportunity or means to qualify themselves for attendance on ladies.

"Several observing moralists have remarked that the practice of employing men-midwives has increased the corruption among married women. Even among the French, so prone to set aside the ceremonies between the sexes, the immorality of such exposures has been noticed. In an anecdote of Voltaire, it is related that when a gentleman boasted to him of the birth of his son, he asked who assisted at the delivery. To the answer, 'A man-midwife,' he replied, 'Then you are travelling the road to cuckoldom!' The acutely-observing historian of nature, Count Buffon (on puberty), observes: 'Virginity is a moral being, existing solely in purity of heart. In the submission of women to the unnecessary examinations of physicians, exposing the secrets of nature, it is forgotten that every indecency

of this kind is a violent attack against chastity ; that every situation which produces an internal blush, is a real prostitution.' It is very certain, where these exposures have been most common, as in large cities, there adultery has been most frequent. Be it folly, or prejudice, or not, there is a value in the belief that the husband's hands alone are to have access to his sacred wife. Break through the prejudice, if you please to call it so, but for once—unless powerful reasons command it, the Rubicon is passed ; and rely upon it, the barriers, on future emergencies, will not be so insuperable. Time and opportunity to press on a grateful heart for a favor in regions where magnified favors have been conferred, have been used, and more frequently desired. To convince you of this, you will not require me to enter into the secret history of adultery. Many of these modest-looking doctors, inflamed with thoughts of the well-shaped bodies of the women they have delivered, handled, hung over for hours, secretly glorying in the privilege, have to their patients, as priests to their penitents, pressed for accommodation, and driven to adultery and madness, where they were thought most innocently occupied. In one case, I was well assured that a physician in Charleston, infuriated with the sight of the woman he had just delivered, leaped into her bed before she was restored to a state of nature. The melancholy tale of the seduction of the wife of a member of Congress from Carolina, by her accoucheur, is a warning that ought not to be disregarded. The beautiful organization of the lady preyed on his mind for years : he sought her from one to the other extremity of the country, regardless of all dangers ; and, on acquiring his game, received a premature and violent death—leaving horror and ruin in the family he had been hired to serve.

"Whatever you may think on this subject, there are many husbands to whom the idea of their wives' exposure of person is horribly distressing. I have heard of cases affording singular mixtures of the ludicrous and distressing. In one case in my neighborhood, the husband sent for his physician to his wife in labor, yet was so strongly excited at the idea of her exposure, that very solemnly he declared to the doctor he would demolish him if he touched or looked at his wife ! No man, possessed of a correct and delicate regard for his wife, would subject her to any exposure to a doctor, that could be avoided without danger.

"But the opposition, the detestation of this practice, can not be so great in any husband as among some women. The idea of it has driven some to convulsions and derangement ; and every one, of the least delicacy, feels deeply humiliated at the exposure. Many of them while in labor have been so shocked at the entrance of a man in their apartment, as to have all their pains banished. Others, to the very last of their senses, suffering the severest torments, have rejected the assistance of men They did err on the side of delicate feeling : but their errors will be blotted out for ever ! To be instrumental in relieving one of this truly interesting cast, will be a heavenly consolation to all who can be alive to the pleasure of serving the virtuous.

"It requires but a little understanding of this subject to enable you frequently to prove of great service in removing the fears and forebodings of many ignorant sufferers, who imagine that only professional skill can afford relief. Many such objects of commiseration have languished day after day, solely from the want of a little information in one of the attendants—all unnecessarily lamenting that physicians can not be procured. By a little information, you can at all times prevent the miserable mutilation of mother and child, which has frequently been committed in a shocking manner, solely from the grossest ignorance. Indeed, to be able to say to ignorant midwives, fancying they must be doing something continually—'Thou shalt not interfere—thou shalt not meddle with nature'—will alone be sufficient to effect essential service. On other occasions, and in all parts of the country, sudden labors coming on before proper attendance can be had, you will be able to do important good to mother and child. One case of suffering of this kind, from want of assistance, in my opinion, is a great reflection on the ladies who are convenient for attendance. Indeed, I think it disgraceful that any female should be allowed to grow up in ignorance—in pursuit of pleasure—too fancifully nice—so falsely delicate as not deliberately to get so much knowledge in one hour as will enable her to do, or to direct the unlearned servant how to perform the little offices required on the emergency, to which all of them are subject.

"It is not to be disguised that all classes in the community have to deplore the loss of some friend in

child-bed. Many are mourning at the loss of amiable wives, victims to what ought to have been the subject of their joy. Parents are still lamenting the premature death of their daughters—buoyed up with the hopes of feeling as mothers, when the pains of labor were forgotten. Innumerable babes have been sacrificed in the most afflicting manner, many of whom might have become ornaments to their country. All such calamities might have been prevented, if but one lady in the neighborhood of each case had devoted but a part of the time spent in guessing about the operation, to an accurate knowledge of the subject, so that she might have directed the ignorant and meddling attendants. It is said the Lord declared he would save the city of Sodom if but ten good men were found in it; and surely it is equally certain that the whole of you should attend to this subject, with the prospect even that only ten might be called on to render the needful assistance.

“Every day shows that the practice of midwifery requires no particular skill, no superior knowledge, no sleight-of-hand, nothing beyond the most common sense and observation, to do all that is required with perfect success. Nature has so wisely provided for the birth of the young, that even the extensive practice so highly rated among ladies is not necessary for the discharge of all the duties required from attendants. The male practitioners, who in general from accidents have got into great repute, received their first impressions from books, from directions which any one in the country can comprehend. The increasing applications to these women-doctors, remaining satisfied with such business, are really made in vain; for most commonly in qualifications they are not far removed from the sisters of the profession. Physicians of the best abilities, discovering that it is by the fingers instead of the talents that many get the most profitable business, attend to this subject only in the beginning. An introduction into better occupation, excepting in the cases of their favorites, is almost invariably followed by an abandonment of midwifery; so that the ladies have often to look out for different attendants.

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“During the simplicity of the early ages, women alone officiated at births. In Egypt, the cradle of so much science, they were the sole actors. At Athens, a law was passed forbidding them to practise; but from perseverance among the delicate, preferring death to exposure, the law was speedily repealed. Since then, no government, it is believed, has been so ridiculous as to compel such unnatural interference. In consequence, the practice has been confined to women, until within a few years, in some European countries and their colonies. The excessive spirit for meddling with women is nowhere so great as in France. They are so fond of indulging their curiosity at births, that they even attend on the domestic animals in labor. Mr. S—— told me that he witnessed the operation by a professional character for cows. The cow, displeased with his intrusion, made all possible resistance; and, when it was over, for hours endeavored to attack the meddler. There is a stronger sense of propriety among the northern neighbors of the French. The Danish government, viewing the employment of men-midwives in natural labor as highly improper, established schools for the instruction of women in the principles of midwifery. Several of the German states have imitated the example. The American government should establish such institutions. The legislators in Congress would thereby render the nation more essential service than they have done for years.

“If the difficulty of obtaining doctors at the proper time; if the indelicacy and tendency to immorality of having them in any but the critical and unnatural cases; if the propriety of giving to helpless women proper encouragement and support; if the salvation of many women, who, shocked at male interference, have their pains banished and minds deranged, and who sometimes prefer death to exposure; if the salvation of many children born almost without warning; if the prevention of the destructive interference of ignorant attendants can not, induce you to attend to this subject—the mechanical advantage between a man’s and a delicate woman’s hand ought to command your decision in favor of employing and encouraging female assistants. Such is the confined organization of the parts for our birth, and such the large size of men’s hands, that I verily believe as much mischief as good has been done by them, as has been stated by more extensive observers than myself. I conclude with the remarks, that when professional assistance becomes necessary, from unnatural occurrences, the case is altogether altered. The

exposure is not of parts in a natural state, but deranged ; the woman becomes a patient for his operation ; is a subject of commiseration ; and the solicitude to remove her danger and agonies is the only thought a man can have. In such cases, there ought not to be the least hesitation in the female to submit to examination ; there is no indelicacy in it. Religion, future usefulness, command that life should be preserved at the expense of a hundred such sacrifices. The rule that I would prescribe to the females for whom I felt most affection and solicitude would be, that which I now urge : on no account submit to the interference of men in common labor ; do it most readily in the uncommon cases, when a midwife under the direction of a physician can not afford relief. I will venture to add that there is not a disinterested physician, of sound sense, who would not approve of the rule. *The best authors on midwifery decidedly recommend it.*"

James Boyle, a physician of the reform school, also takes the same view of the subject. He remarks as follows :—

"WOMEN THE DIVINELY-APPOINTED ACCOUCHEURS.—The attention of the public is called to the present false, improper, demoralizing, and destructive opinions which are entertained by the majority of the community, and which are sustained by a powerful class of INTERESTED men, respecting the *true persons* who should officiate as accoucheurs in obstetrical cases. The prevailing doctrine is, that women can not be sufficiently informed, self-possessed, and efficient, to qualify them to act in such cases as principals, and that in all instances male-midwives are necessary. This I know, and so do thousands of others, to be false, utterly so. Man never can be equal to woman in any case, except where the use of instruments is indispensable, and such instances are exceedingly rare ; and in all such cases, a male accoucheur can as well be called in when the time arrives which indicates the necessity for their employment. Women can be as well informed as it is possible for men to be ; as self-possessed, vigorous, efficient, as men ; and they are far more tender and careful—know better how to adapt themselves to the case—have freer communication with the patient—do not arrest the process of nature by shocking the modesty and delicacy of woman, which is always sure to do injury. Where is the man who can exceed Madame La Chapelle and Madame Boivin, of France ; Mrs. Alexander, of Boston, Mass. ; the late Mrs. Halsey, or the present Mrs. Haynes, of this city ? Thousands of mothers will testify that these, and many, very many other women, are to be preferred to any male accoucheur which the world knows. I hesitate not to say that hundreds of women perish in child-birth from the employment of males, all of whom would have been saved if females had officiated.

"I would say to women, everywhere, that they owe it to the modesty of their sex—to the principles of good morals—to their own lives—to the lives of their children—and the good of mankind—to set their faces against the present destructive, disgraceful, and unrighteous practice of employing in ordinary cases, males instead of females, as midwives.

"The manner in which women are obliged to submit themselves—sometimes months before the time of accouchment—to the shocking liberties which male-midwives may and often do take with them, under the *pretence of performing professional duties*, but really to *test their willingness to sacrifice their virtue to lust*, should arouse every virtuous husband and wife in the land ; should awaken the moral indignation of the entire community, and induce them to combine to abolish a practice which is full of abominations, and which should be tolerated in no civilized or CHRISTIAN country, for in heathen countries it is not ! No virtuous man, jealous of the honor and dignity of his wife, as an affectionate, virtuous husband—no man or woman of chaste moral principle—will think our language too strong, who are aware that women are more susceptible to temptation during pregnancy than at any other time, and who will examine the plates and the remarks made under the head of 'TOUCHING,' in the large works on obstetrics—as, for example, Doane's translation of 'Magrier on Midwifery'—and who will observe the *shameless positions* in which MEN are presented in contact with women ! Oh, loathsome abomination !—If such plates or illustrations are necessary (?) why not introduce women instead of men ? Ah ! there's the rub : 'Our CRAFT would be endangered, by teaching women a lesson that they might learn to our disadvantage !'

"That Book, which is the standard of all genuine morality, recognises none other than female midwives ;

and all the time that sacred canon was filling up, till its last revelation was completed, none other were known or dreamed of than female accoucheurs. The Jews knew no other; the early Christians also. So with all nations during those times: and yet mothers delivered their children as easily, as safely, and as speedily, as they have during any period since. The employment of males is a comparatively modern practice, and has come in with other corruptions which distinguish these modern days from those more simple, unartificial, primitive times.

“In the preceding remarks, it is not intended that men should be discouraged in acquiring a thorough knowledge of midwifery. This they should most certainly possess in order that they may be prepared to act in emergencies where their services are really needed, in order that they may be qualified to teach others, especially the women of our country, who are truly in great darkness on this subject, and I must think CRIMINALLY so—in order that they may act till women are in all places sufficiently enlightened, and so far REFORMED, as to be disposed to take the matter into their own hands; and, finally, in order that they may always be qualified to act in all cases where no other assistance is at hand. But while males are to a great extent compelled to officiate as accoucheurs at the present day, let them labor as honest, disinterested, and virtuous men—as men who have wives, sisters, daughters, and an interest in the modesty, purity, rights, and interests, and, what is paramount to all, the VIRTUE of the female sex—to bring about that period when they can properly abdicate their usurped office, and restore it to its rightful and original proprietors. Let them not, for the sake of a fee, for the sake of sordid self-interest, place themselves in the way of temptation, or the women who confided in them; let them not shock the delicacy, impair the modesty, and thus prepare the way for the fall of her who is the connecting link between angels and men, and who, under God, is the means of civilizing, refining, and preserving man from unbounded licentiousness: for men as a mass are born libertines—women as a mass are born chaste; hence male-midwifery originated with men, and came from beneath; it never could have originated with chaste, pure, virtuous woman! Let them not labor to perpetuate so odious a practice, by keeping women in ignorance—by endeavoring to discourage them from informing themselves—by depreciating their ability—by decrying female midwives—by working upon the fears of prospective mothers, and inducing them to distrust the capacities of their own sex. And let those medical gentlemen who have thus far acted from a pure and honest purpose, but in ignorance of the infinite mischiefs which have resulted from an intrusion into a department which never belonged to them—I say, let them not, by their EXAMPLE, sustain a practice which has licensed, which now licenses, hundreds of libidinous fiends in human shape, wolves in sheep’s clothing, under the cloak of the medical profession, to plunder thousands of women of the dearest pearl of their human, domestic, social life; and thus, by mal-practice and immoral conduct, from generation to generation, plunge husbands, wives, parents, children, and friends, into irretrievable wretchedness and disgrace. For humanity’s sake, if for no other, seek to rid yourselves of this pernicious practice!

“It may be objected, that there are as delicate cases connected with the diseases of women as any part of midwifery can be—as diseases of the uterus, the vulva, the vagina, the urethra, &c. I acknowledge it, and claim that women ought to be the physicians and surgeons in all such cases. They have officiated in England, France, and in this country, as scientifically, efficiently, and successfully, as men ever have, even in the worst cases, and to their hands all such cases should be committed. Many women prefer death in such cases, especially young women, to the interference of males. And let me add here, that every man who insists upon officiating in such cases, and who thrusts women aside as practitioners, by usurping their places, is thereby compelling multitudes of magnanimous, modest, and pure-minded females—the very noblesse of the sex—to lay their lives as sacrifices upon the bloody altar of their accursed love of pelf and plunder!

“Some such there are, and I can not but believe that many noble-minded physicians and surgeons are to be found—men who highly respect and appreciate woman—men who are husbands, fathers, sons—who fear God and hate covetousness, and have assumed the province of woman in these cases from necessity—who will appreciate these remarks, and who would rejoice to see a new era introduced,

which would place all these matters in their true relations. With such—with enlightened women—with Him who rules the affairs of men—I leave my testimony; and to Him and them I make my appeal.'

To show how grossly and wickedly women are sometimes deceived and imposed upon by medical men, I give the following paragraph from the "London Practice of Midwifery:"—

"A patient, after the waters are discharged," says the author, "requires a little management. It is not just to stay with her at the time; and yet it is necessary, if we leave her, to leave her in confidence. Therefore we may give her the idea of making provision for whatever may happen in our absence: we may pass our finger up the vagina or opening to the womb, and make a moderate degree of pressure, for a few seconds, on any part of it, so that she may just feel it; after which we may say to her, 'There, ma'am, I have done something that will be of great use to your labor.' This she trusts to; and if, when she sends for us, we get there in time, it is well: if later than we should be, we easily satisfy her. (For 'the doctor knows!')—'Yes! you know I told you I did something which would be of great service to you in your labor!' If the placenta is not yet come away—'Oh, I am quite in time for the after-birth, and that, you know, is of the greatest consequence in labor!' And if the whole has come away—'We are glad the after-birth is all come away in consequence of what we did before we last left, and the labor terminated just as we intended it should!'"

This farce and deception probably costs the husband five or ten guineas.

Do you think, reader, that one of our North American Indian women could be thus cheated and humbugged?

Notwithstanding the above severe strictures on the employment of men-midwives, I do not wish for a moment to be understood to state that they are not to be *taught*, or that they are never to *officiate*, in parturition. On the contrary, their services will be often needed.

In the first place, such is the custom of society, that a portion of females will employ no others. For this reason, it is indispensable that they should be taught the true method of assisting nature, instead of forcing her with instruments. Not only so, but even where females attend, cases will be frequently occurring in which their counsel will be required and even demanded; so that they ought to be thoroughly masters of the art in all its departments—ready and able to act in any emergency that may occur. Besides, in the present state of society, it is to well-instructed and capable male practitioners to which females must look for instruction. Again, there are but very few females in the present day that are even tolerably well qualified to attend to this department; hence, also, the great necessity for the physician well to understand this branch. Schools should be immediately established for the instruction of females; and any well-qualified, reformed practitioner could privately instruct them in the absence of such schools.

I hope none of my medical brethren will draw wrong inferences, or take offence at any of my remarks on this subject, or suppose that I desire to injure them in their practice. I am confident that if they will seriously reflect on this subject, they will not feel aggrieved, or be at all unwilling to give up the practice to well-educated females, to whom it rightly belongs, at least in all ordinary cases.

On the score of interest, I am sure they will be gainers by the change; for a man could make more money in attending ordinary cases of sickness in the same time, than his fee would amount to for attending a case of labor, especially where it is much protracted. Besides, another disadvantage to the physician engaged in this practice is, that most of these cases occur in the night, and the practitioner is roused from his sweet slumbers, which to most men is a source of great vexation and annoyance, and which very much injures his health, and renders him unfit for the other duties of his profession for several successive days. Sometimes he is compelled to ride a great distance, and during a protracted labor kept under intense anxiety of mind for several days, for which no money can compensate him; for I assert, without any fear of contradiction, that this branch is the most laborious and trying part of the medical profession. May we not, then, hail an exemption from this duty with acclamations of joy, instead of regret?

QUALIFICATIONS OF MIDWIVES.—Respecting the qualifications of midwives, I feel it incumbent on me to state explicitly that all those, either male or female, who engage in this noble and responsible branch of medicine, should be well qualified, both in theory and practice. I would not allow any to commence the profession of midwifery without first having expended a suitable length of time in study under competent persons. No ignorant or inexperienced man or woman should ever officiate in this department. They should first acquire a knowledge of midwifery, either by lectures, recitations, examinations, or, above all, by clinical practice, or actual attendance in the lying-in room, under the superintendence of qualified teachers.

And I would also recommend to every student of midwifery, either male or female, who may wish to become properly qualified in the art, to take this work, as a *text-book*, into the lying-in room with them; and there to study it during the progress of labor—during the intervals in which no assistance is necessary. By this means, the student will acquire competent knowledge, both theoretical and practical, which is the only way to attain perfection in the science; and that all should be required by the public to give evidence of having so studied, by a diploma from the school, or certificate from the physician, with whom they have studied. It is only in this manner that we can expect that the confidence of the public will be given to females, or their services can be made available in the lying-in chamber.

I will conclude my observations on this subject by quoting a few quaint remarks of Dr. Maubray, on the character of those who should be employed in midwifery. He wrote over a hundred years ago, when female accoucheurs were more in fashion than they now are:—

“A midwife ought not to be an ignorant, stupid, indolent, or a dull person; and especially not incapable of conceiving matters distinctly, or judging of things aright. Neither ought she to be a self-indulger, slothful, or lazy; nor a light, dissolute, or daring person. She ought not to be inconsiderate, negligent, or forgetful; nor proud, passionate, or obstinate: neither peevish, morose, nor surly; nor fearful, doubtful, or wavering-minded. Neither ought she to be a tippler or drunkard, nor a tattler or vagabond, nor a covetous or mercenary person.

“But, on the other hand, in the affirmative, she ought—1. To be a woman of a good middle age, of solid parts, of full experience, of a healthy, strong, and vigorous body, with clever, small hands: since nothing can be more agreeable and conducive to the art of midwifery than slender hands, long fingers, and a ready feeling.

“2. She ought to be grave and considerate, endued with resolution and presence of mind, in order to foresee and prevent accidents; sagacious and prudent in difficult cases, so as not to take all upon her own shoulders or judgment, but to have immediate recourse to the ablest practiser in the art, and freely submit her thoughts to the discerning faculty of the more learned and skilful.

“3. She ought to be watchful, diligent, and expert, in all cases and conditions that can or may occur; so that no opportunity in the beginning of the labor be lost: since I have more than once observed that the mistake or neglect of improving a critical minute hath cost the mother many violent or heavy pains afterward, and the child also its life. For which reason it is of the greatest importance to nick the opportunity, conformable to Cato’s saying:—

“‘*Fronte capillata, post est occasio calva.*’

“4. She ought to be a true fearer of God, a conscientious person, of good life and conversation: since matters of the greatest moment are committed to her care, and depend entirely upon the faithful discharge of her duty: for she has the first and best opportunity of showing her compassion and tenderness to mankind, in this infant and helpless state. In short, charity ought always to engage her, to be as ready to help the poor as the rich; the life of the one being as dear as the other’s, and the image of God being equally stamped upon both: for the ineffable recompense of charity far exceeds all other considerations of trifling gain.

“5. She ought to be patient and pleasant—soft, meek, and mild, in her temper, in order to encourage and comfort the laboring woman. She should pass by and forgive her small failings and peevish

faults, instructing her gently when she does or says amiss ; but if she will not follow advice, and necessity require, the midwife ought to reprimand and put her smartly in mind of her duty : yet always in such a manner, however, as to encourage her with the hopes of a happy and speedy delivery.

“ 6. In like manner as she ought to be modest, temperate, and sober, so she ought to be faithful and silent ; always upon her guard to conceal those things which ought not to be spoken of.”

Another very ancient author on the same subject remarks :—

“ If the fear of God does not engage her to act conscientiously, and to discharge her duty faithfully, serious accidents may happen, both to mother and infant. But being forearmed with the fear of the Lord, and not confiding altogether in her own knowledge, knowing that she stands in need of Divine assistance, will be earnest in prayer. She will therefore act wisely, in thus relying upon Divine Providence, who graciously supplies with wisdom all those who need and ask for it.

“ A midwife should be mild, kind, and meek, for women are the weaker vessels ; and those in labor are full of pain and peevishness, and often desponding, whom the midwife is to support and encourage with hopes, as far as the condition of the mother and infant will permit. The woman should never be intimidated by her, nor should she suffer others to intimidate her, by relating stories of accidents which have befallen others. And when there is any real difficulty in a case, she should be willing and desirous to send for an experienced physician, with whom to counsel before it is too late to remedy the evil.”

In conclusion, a few words from Dr. Maubray on instruments :—

“ What can be more inconsistent with the tender nature of women, or more terrible to them, than to see men come armed against themselves and their tender infants, with knives, hooks, iron forceps, &c., thereby, as it were, to help them in time of their extremest agony ? For my part, I am positive that, let who will use instruments, they kill many more infants than they save, and ruin many more women than they deliver fairly. And this I think will be easily agreed to by all those who have any knowledge of the parts of generation in that sex, as (I believe) it is also sufficiently evident even to those who have no judgment that way, by the notorious fatalities and tragical events they daily hear of in fact.

“ However, I know some chirurgion-practitioners are too much acquainted with the use of instruments to lay them aside ; no, they do not (it may be) think themselves in their duty, or proper office, if they have not their cruel accoutrements in hand ; and what is most unaccountable and unbecoming a Christian is, that when they have perhaps wounded the mother, killed the infant, and, with violent torture and inexpressible pain drawn it out by piecemeal, they think no reward sufficient for such an extraordinary piece of mangled work !

“ But, in short, I would advise such to practise butchery rather than midwifery ; for in that case they could sell what they slay ; but in this, by handling man so, they only bring infamy upon their own profession, and expose it to the contempt and hatred of others.”

PART FIRST.

REPRODUCTION.

CHAPTER I.

ORIGIN OF VEGETABLE LIFE.

THE limits which have been set by the Creator to the duration of the life of each being that exists at any one time on the surface of the globe, would cause the earth to be speedily unpeopled, were not a compensation provided in the faculty of reproduction—or of the formation of a new being similar to itself—possessed by every kind of plant and animal. This power of creating (as it were) a living structure, with all its wondrous mechanism—possessed, too, in animals of the faculties of sensation and thought, and in man the residence of an immortal spirit—seems at first sight more extraordinary and mysterious than any which we elsewhere witness. Yet it is not perhaps so in reality. The processes which are constantly taking place during the life of each being, and which are necessary to the maintenance of its own existence, are no less wonderful, and no less removed from anything which we witness in the world of dead matter. When the tree unfolds its leaves with the returning warmth of spring, there is as much to interest and astonish, in the beautiful structure and important uses of these parts, as there is in the expansion of its more gay and variegated blossoms; and when it puts forth new buds, which by their extension prolong its branches over a part of the ground previously unshaded by its foliage, the process is in itself as wonderful as the formation of the seed that is to propagate its race in some distant spot. Thus it is that scientific knowledge heightens our interest in nature, by showing that, in those things which seem most common, there are as many sources of interest and instruction as in that which, from its apparently mysterious character, is usually regarded with more curiosity.

The parts of a flower essentially concerned in the reproductive process are the *stamens* and *pistil*. The stamens are a number of little bodies, having yellow heads mounted on long stalks, which are seen *around* but not *in* the centre of the flower. These stalks are called *filaments*, while the heads are called the *anthers*. Each head is usually seen to be more or less completely divided into two parts, which are termed anther-lobes. These are commonly united together, as in fig. 1, *a, b, c, d*; but sometimes they are separated, as at *e*; and occasionally only a single lobe is present, as at *f*. Within the stamens are produced a number of minute yellow bodies, usually of a globular form, which together constitute the fine dust known as the *pollen* or *farina* of the flower. Each grain of pollen, when examined with the microscope, is seen to consist of a cell exactly analogous to that which constitutes a spore. It has two or more coats, which enclose a fluid; and in this a large number of extremely minute granules may be

seen with a good microscope. These granules are probably the germs of new cells ; being analogous to those which are sent forth from the Red Snow. They may be seen to move within the parent cell, or pollen-grain, previously to the time when its walls become too thick to allow of their being observed through them ; and, when the contents of the pollen-grain are mixed with water, they are seen to be constantly performing a sort of vibratory motion.

The anthers, or receptacles of pollen, burst when their contents are mature, and scatter the grains forth. They have various ways of opening : sometimes they split along their length, as at *a*, fig. 1 sometimes they split transversely, sometimes by little openings at their extremity, termed *pores*, as at *c* ; and sometimes by valves, as at *d*. These different methods are characteristic of different tribes of flowering-plants.

Now the portion of the reproductive system is that which is denominated the *ovarium* or seed-vessel, which occupies the centre of the flower, being sometimes situated above and sometimes below the point at which the leafy parts of the flower arise from the axis which bears them. This ovarium is the part in which are formed the *ovules* or young seeds ; and these, after being fertilized in the manner presently to be described, ripen into the perfect seeds. Sometimes it consists of several evident divisions ; in other instances, these are united together, more or less closely ; and all mark of a division may even disappear. Fig. 2 represents the centre of a flower in which the several parts of the ovarium remain separated ; three only are seen, the others being concealed by them. These separate parts are termed *carpels*. Each carpel is surmounted by a sort of pillar, termed the *style* ; which usually expands at its summit into a fleshy surface, called the *stigma*. When the carpels adhere closely together, their styles also frequently unite, so as to form a single pillar, which sometimes, however, divides again into several branches at the top. The ovarium, with its style and stigma, is then called the *pistil* ; and sometimes each separate carpel with its own style and stigma, receives the same appellation. An excellent illustration of an ovarium consisting of many carpels, appearing externally single, but each really separate from the rest, is the orange : the rind of this fruit is formed by the external part of the flower which wraps over the ovarium, while the juicy part is the ovarium itself, composed of a number of carpels adhering together, but not so closely united as to prevent their being torn apart. The position of the pips or seeds of the orange will give a good idea of the manner in which they are usually situated within the carpels, especially when they are few in number. Sometimes, however, they are attached to the whole length of the carpel, from one end to the other, as is seen in the common pea, of which each pod is a separate carpel. The portion of the carpel from which ovules arise is usually thick and fleshy, and is termed the *placenta*. The section of the pistil of the *whortleberry* will give an idea of the arrangement of the parts in an ovarium whose carpels and styles have united. The ovarium of this flower is wrapped over, like that of the orange, by the leafy portion of the flower itself, which is seen to rise beyond it. The centre of the ovarium is occupied by a thick fleshy placenta, formed by the union of that of the several carpels ; and on this the ovules are clustered. Above is seen the single style with its stigma. Another variety of the same kind of structure is shown in this plant : here the ovarium is in like manner enveloped by the outer part of the flower ; and the partitions between the carpels have entirely disappeared, so that only one central pillar is left, around which the ovules are clustered. There is another common form of the ovarium, of which that of the common heartsease may be taken as an example. In this the partitions have disappeared ; but the placenta of the several carpels, instead of remaining clustered together, are attached separately to the walls of the ovarium.

These two sets of organs are by no means constantly united, however, in the same flower. The *staminiferous* or stamen-bearing flowers are frequently distinct from those which are *pistilliferous* or bear pistils. When they occur on some other part of the same plant, it is said to be monœcious (single-housed) ; if on a different plant, it is diœcious (or double-housed). Sometimes the same collection of flowers contains some perfect ones, with others staminiferous, and others pistilliferous only. There is reason to believe that, when either set of organs is not developed, the rudiments of it really exist ; for these parts are frequently made to appear by cultivation.

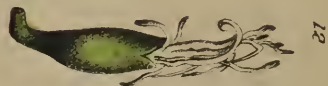
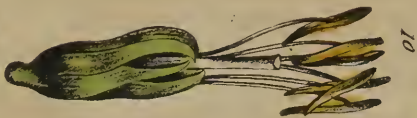
If the ovarium be cut into, previously to the opening of the flower, it will usually be found to contain a great number of the ovules or young seeds. These are at that period quite soft ; and their interior is filled up with a kind of pulp, which is enclosed in two or more envelopes. These seed-coats do not entirely cover the central envelope, but leave a small opening, which is called the foramen. This opening may be easily detected in the perfect seed, although it has there nearly closed up, by soaking it in water, and then pressing out the fluid that has been absorbed, which will be seen to issue from this little orifice. The foramen, as will presently appear, has a very important purpose in the fertilization of the seed ; which, at the period now described, contains no trace of the germ of the new plant.

This germ appears to be conveyed into it from the pollen in the following curious manner : The little grains or cells, when set free from the anthers, fall upon the stigma of the pistil. In general, the anthers are situated above the stigma—the stamens being longer than the pistil in flowers that are erect or upright, and shorter in those which hang down ; but sometimes a special provision is necessary for the conveyance of the pollen to the stigma, especially in monœcious or diœcious plants. This function is often accomplished by insects, which, in going from flower to flower in search of honey, cover over their bodies with pollen-dust, and rub them accidentally against the pistils of other flowers. When the pollen falls on the stigma, it is caused to adhere to it by a honey-like secretion from its surface ; and after a short time, it undergoes a remarkable change.

The outer coat of the pollen-cell appears to burst at one or two points, and to allow the inner coat to pass out through it in the form of a tube. This tube insinuates itself between the cells of the stigma, and passes down between the long and loosely-arranged cells of the style. It gradually extends, until it reaches the ovarium itself, even when the style is several inches long. The pollen-grains are not always globular, but are sometimes triangular, and emit a pollen-tube at each corner, as the figure. The tubes, when they arrive at the ovarium, direct themselves toward its different chambers, and have been seen to enter the apertures in the several ovules, which are at that time directed toward the part of the base of the style, from which the pollen-tubes project themselves. Sometimes a considerable change in the position of the ovule is necessary, in order that the foramen should be applied to the right portion of the wall of the ovary : but this change always takes place just as the pollen-tubes are passing down the style. The granules which the pollen-grain originally contained, are seen to pass down the tube ; and some of them are conveyed by it into each ovule. While yet within the tube, they are seen to develop themselves into new cells ; and these cells are the rudiment of the future plant.

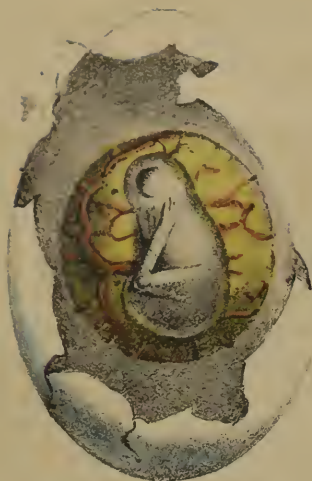
The germs are thus conveyed into a sort of receptacle or vegetable womb, where they are supplied with nourishment that has been previously prepared and stored up for their use by the parent structure ; and they are thus greatly assisted in their early development. The pulpy matter contained in the ovules consists of starch and sugar ; and these nutritious substances are absorbed by the cells of the embryo, which increase at their expense. The first increase of these cells does not so much tend, however, to form those parts which are afterward to be developed into the stem, root, and leaves, as to produce those temporary structures, termed *cotyledons*, or seed-leaves, which are destined, like the primary frond of the ferns, to assist for a time in the development of the permanent structure, and then to wither and decay. Hence, at the time of the ripening of the seed, the cotyledon forms the greatest part of the embryo or young plant. Besides this, the seed contains a considerable quantity of starch, destined for the nourishment of the young plant, when it is beginning to sprout, and while yet unable to take in food for itself. This starch is sometimes absorbed into the tissue of the cotyledons, rendering them thick and fleshy, as in the pea or bean ; and then these, with the small germ to which they belong, form the entire contents of the seed. In other instances, however, the cotyledons are thin leafy organs, and occupy, with the germ, but a small part of the seed ; the remainder then consists of a separate store, which closely resembles the yolk-bag of the egg, and is termed the *albumen*. This is the case in the seeds of the ash and horse-chestnut.

The structure of the seed of the two principal divisions of the phanerogamia plant is easily shown. In the fig., is seen that of the bean, a *dicotyledon*, after the seed-coats have been stripped off, and the









7th day.



8th day.



9th day.



10th day.



11th day.



12th day.



13th day.



14th day.



15th day.

cotyledons separated. The two large fleshy lobes, *a a*, are the cotyledons, into which the whole of the starch originally contained in the ovule has been absorbed. Between these is the real germ; the upper extremity of which, termed the *plumula*, subsequently develops itself into the stem, and puts forth leaves; while the lower part, which is always directed toward the foramen, becomes the root. The plumula sometimes presents the appearance of the plant in miniature; its leaves and buds being quite discernible, though on a very small scale. The subsequent development of the germ contained in the seed into the perfect plant, is that which in its early stage is known as *germination*. Of the causes which excite it, we shall presently speak. When a seed like that of the bean begins to germinate, it first swells and bursts its seed-coats; the plumula then extends upward, bringing the cotyledons just above the surface of the ground, while the radicle penetrates it in the opposite direction. In some plants, however, the cotyledons remain under ground, as in the oak; and there are a few in which they are entirely absent. The cotyledons, when exposed to the light, become green, and perform for a time (though imperfectly) the functions of leaves, at the same time yielding to the young plant the nourishment they contain. By the time this is exhausted, the true leaves and roots are sufficiently developed for the support of the structure; and the cotyledons, being then no longer required, decay away.

The representation of the seed of the marvel of Peru, will afford an example of a dicotyledonous seed possessing leafy cotyledons and a separate albumen; in these, the process of germination is the same, except that the cotyledons only perform the functions of temporary leaves, the nutritious part of the seed being retained within its coats, until it is exhausted by the young plant.

In the seeds of the *monocotyledons*, the structure of which is illustrated by the representation of that of the onion or wild lily, the albumen is always separate; and the embryo, which occupies but a small proportion of the whole mass, can not always be readily distinguished in the midst of it until germination commences. The cotyledon at first completely sheathes the plumula, which afterward pierces it, and unrolls its first true leaf.

The conditions requisite for the germination of the seed, are warmth, moisture, and the presence of oxygen. The process is also favored by darkness. The influence of each of these agents will be readily understood. No vital action can go on without a certain amount of *heat*; and where this is not produced within the being, it must be derived from without. The germination of the seed is as much dependent upon warmth, therefore, as the hatching of the egg of a bird; though the amount it requires is not nearly so great. *Moisture* is also evidently required, for the conversion into a fluid state of the dry nutriment which has been previously stored up in the seed: and no change can commence until this be supplied. The presence of *oxygen* is necessary, because the conversion of starch into sugar requires that some of the carbon of the former should be set free; and this can only be accomplished by the union of it with oxygen, so as to form carbonic acid. This process is favored by darkness, because light has a tendency to produce the contrary change—the *fixation* of the carbon within the structure.

It is interesting to observe how all these conditions are supplied, in the ordinary course of nature, by the soil in which the seed is dropped. If it be sown during the spring or summer, it speedily begins to germinate; but if it is deposited in the autumn, it remains almost unchanged, until the winter has passed, and the returning warmth of the air and earth arouses it into activity. It is seldom that the soil is so completely destitute of moisture, for any long time together, as not to be able to excite seeds to germinate; but their sprouting is well known to be favored by damp weather: and if seeds, through being put into the ground during a drought, remain undeveloped, they are brought forward very rapidly by a genial shower. A porous soil is to be preferred, on account of the free admission of air which it gives to a germinating seed, as well as for the other processes of vegetation. A stiff clay soil prevents this necessary contact, and thus impedes germination. So complete a check, indeed, may be thus produced, that it has been proposed to bury seeds in clay rammed hard, when it is desired to convey them from one part of the world to another through very hot climates; the high temperature of which might destroy their vitality, if its influence were not partly prevented by the bad-conducting power of the mass in which they are thus enclosed. If seeds be buried very deep, even in a light soil, the contact of oxygen will be

sufficiently impeded to prevent their germination ; and the bringing such seeds nearer to the surface will then have as much influence in causing them to sprout as the supply of either of the agents just mentioned, which might have been previously deficient.

The seeds of most plants are endowed with a remarkable power of preserving their vitality for an almost unlimited time, if they are placed in circumstances which neither call their properties into active exercise, nor occasion the decay of their structure. The conditions most favorable for this preservation will evidently be a low or moderate temperature, dryness of the surrounding medium, and the absence of oxygen. If all these be supplied in the most favorable manner, there seems no limit to the period during which seeds may retain their vitality—that is, their power, of performing their vital operations, when placed in the proper circumstances. And even if moisture or oxygen be not entirely excluded, the same effect may result, provided that the temperature be low and uniform. Thus the seeds of most plants may be kept for several years, freely exposed to the air, provided they are not exposed to dampness, which will either cause them to germinate or to decay. Some of those which had been kept in seed-vessels of plants preserved in the herbarium of Tournefort, a French botanist, were found to retain their fertility after the lapse of nearly a century.

The following circumstance, which occurred about thirty years ago in the state of Maine, is remarkable : Some well-diggers, when sinking a well at the distance of about forty miles from the sea, struck, at the depth of about twenty feet, a layer of sand. This strongly excited curiosity and interest, from the circumstance that no similar sand was to be found anywhere in the neighborhood, or anywhere nearer than the seabeach. As it was drawn up from the well, it was placed in a pile by itself, an unwillingness having been felt to mix it with the stones and gravel which were also drawn up. But when the work was about to be finished, and the pile of stones and gravel to be removed, it was found necessary to remove also the sand-heap. This, therefore, was scattered about the spot on which it had been formed, and was for some time scarcely remembered. In a year or two, however, it was perceived that a great number of small trees had sprung from the ground over which the sand had been strewn. These trees became, in their turn, objects of strong interest ; and care was taken that no injury should come to them. At length it was ascertained that they were beach-plum trees : and they actually bore the beach-plum, which had never before been seen, except immediately upon the seashore. These trees must, therefore, have sprung up from seeds which had existed in the stratum of sea-sand pierced by the well-diggers ; and until this was dispersed, in such a manner as to expose them to the air, they remained inactive. “By what convulsion of the elements,” adds the narrator, “they had been thrown there, or how long they had quietly slept beneath the surface of the earth, must be determined by those who know very much more than I do.”

Perhaps the most remarkable instance on record, as presenting satisfactory proof of the lapse of at least sixteen hundred or seventeen hundred years, is one related by Dr. Lindley : “I have now before me,” he says, “three plants of raspberries, which have been raised in the gardens of the Horticultural Society, from seeds taken from the stomach of a man, whose skeleton was found thirty feet below the surface of the earth, at the bottom of a barrow,* which was opened near Dorchester. He had been buried with some coins of the emperor Hadrian.” Corn-grains enclosed in the bandages which envelop the mummies, are said to have occasionally germinated, though most of them seem to have lost their vitality. There is nothing improbable in the fact ; but as the Arabs, from whom the mummies are commonly obtained, are in the habit of previously unrolling them in search of coins, &c., it is not always certain that the seeds which have sprouted were really at first enclosed with the mummies.

The plant developed from a seed produced by the agency of two races, is termed a *hybrid*. It is necessary, in order that the seeds thus formed should be fertile, that the parent species should be nearly

* These *barrows*, as they are termed, are large mounds of earth, which are very common on the downs along the south coast of England. They are evidently artificial, not natural ; and when dug into, are usually found to contain human remains, with pottery, weapons, &c. Hence they are evidently burial places : and as a large number of them are generally found together, they seem to have been erected on fields of battle to contain the bodies of the slain.

allied to each other ; and it is very seldom that a hybrid can be produced when they do not belong to the same genus. Now, if the hybrid bear flowers, and its stigma be fertilized with its own pollen, it may produce seeds that can be raised into plants like itself ; and these may flower and produce a third generation in like manner. But there is no instance in which a hybrid race, which has thus originated in the intermixture of two species really distinct, has ever been continued without intermixture beyond the fourth or fifth generation. The plant, when not fertile by itself, may bear seed, if its stigma be sprinkled with the pollen of one of its parent species ; and its pollen may be fertile when placed on the stigma of either of these. In this manner, a race intermediate between the hybrid and one of the parent species is produced ; and this is continued longer, just in proportion as it is caused to approach the pure breed by a successive intermixture of this kind. The end of all hybrid races, produced between species really distinct, appears to be, therefore, that either the race becomes soon extinct, which it will do if kept separate, or it merges into one of the parent races, if continued by intermixture with either of them. This principle affords a valuable test for determining what really are, and what are not, distinct species : for if a hybrid race can be produced between them, which continues to be fertile of itself, the probability is strong that they are only varieties. Cultivators of flowers are constantly in the habit of producing such new races between the different varieties of many plants.

The embryo consists of two portions, one named the rosetel, and becoming the root ; while the other, termed plumelet, ascends above the surface, to form the stem and the herbage.

If we observe the order of these changes, it will be found that the seed first swells from the absorption of moisture : its coats burst and decay, the rosetel being enlarged by the sustenance which it receives from the lobes, descends and becomes attached to the ground ; after which the cotyledons are elevated above the surface, and at last the plumelet appears emanating from the base of the seminal leaves.

But a better idea of these successive changes may be derived from the following examples, the former being seeds with two cotyledons, and the latter with one, which remained beneath the earth's surface :—

At a season favorable to vegetation, Malpighi planted some seeds of the gourd, and the following were his observations respecting the development of the young plants : At the end of the first day, the seeds were considerably enlarged ; their coats were moist ; a small orifice was discernible at their summit, through which the fluids seemed to have been absorbed, and the cotyledons had already begun to assume the appearance of seminal leaves. At the end of the second day, the embryo was somewhat enlarged, the traces of its organization were more evident, and its radicle was distinctly visible. At the end of the third day, the exterior membranes had become brown, the rosetel had burst through it, and the plumelet had begun to expand. At the end of the fourth day, the young plant had considerably enlarged, and the nerves of the seminal leaves, which were still enclosed by the coats of the seed, had become very perceptible. At the end of the ninth day, the plant had wholly escaped from the seed, though the plumelet was still enveloped in the seminal leaves, yellowish in its appearance, but generally assuming a tinge of green. At length its extrication was effected, and the rosetel converted into a root ; the rudiments of a stem developed ; and on the twentieth day the plant was complete.

The other example will serve to illustrate the growth of seeds with one cotyledon : Some rye was planted in good soil, and at the end of the second hour its radicle was discernible. At the end of twenty-four hours, the embryo had escaped from its integuments. On the second day, the fibres of the root had augmented, but the leaves had not appeared. On the fourth day, the first leaf began to appear above-ground, at which time its color was red. On the fifth day, it had grown to the length of an inch, and its color was now green. On the sixth day, the second leaf had appeared.

These effects are produced by the united influence of air, water, and heat.

Homberg, a distinguished philosopher of Europe, planted a variety of seeds under the exhausted receiver of an air-pump. They rarely germinated, and in this situation never continued to grow. The experiments of Homberg have been repeated with great fidelity by others, who infer that in the cases of germination mentioned by him the vacuum must have been very incomplete. Seeds which have

remained for years unchanged buried deep in the earth, are often seen to germinate when raised within the influence of the atmosphere ; and the chestnut and acorn are found to grow better on the surface of the earth than when buried beneath it. Achard proved that seeds grow more luxuriantly in compressed than in rarefied air ; and the successors of the illustrious Scheele have, by a series of ingenious experiments, ascertained that it is the oxygen of the atmosphere which excites their germination.

Water and heat are also agents of primary importance. The arid sands of Africa are scarcely embellished by a single plant, and the cold of our winter most effectually prevents the germination of the seeds which are scattered over the earth : but let the rain descend, and it will cause the desert to blossom as the rose ; and when spring returns, diffusing cheerfulness and warmth, it will revive the energies which slumber within the coats of the seed.

The moisture which causes the first enlargement of the seed is chiefly absorbed through the *scar* (a small point by which it was originally connected with the fruit, and easily discernible on the surface of most seeds), but it is also imbibed by the integuments : for the entire exclusion of water from the scar retards but does not arrest the process of germination. In either case, the water which is absorbed passes through the vessels of the cotyledons to the rosette of the infant plant, which exhibits the first indications of vitality. Hence we learn how these vessels are tinged when the germinating seed is placed in a colored fluid, and why the young plant inevitably dies if the cotyledons are prematurely removed.

But the fluids thus imbibed by the seed do not reach its embryo unchanged. They dissolve the farina of the albumen or lobes, a quantity of carbonic acid gas is disengaged, and a fermentation is thus begun, which terminates only in the evolution of the new plant, or in the destruction of its vitality. If no oxygen gas be present, the latter consequence ensues : for whether it stimulates the vital principle, supplies the embryo with food, or converts the farina of the cotyledons into a mild and nutritive substance resembling sugar—whatever be its mode of operation—the importance of this agent, nay, its necessity to germination, has been most fully established.

By removing even a minute portion of its carbon, the farina of seeds is converted into sugar ; and, from the very luminous experiments of the younger Saussure, it has been reasonably inferred that oxygen promotes the germination of seeds only as it combines with their carbon, and enables it to escape. Thus, by a process nearly allied to that of malting, the infant plant is supplied with food ; and it is probable that in the former, as well as in the latter case, a small portion of heat is disengaged. “I conceive,” says Dr. Smith, “the evolution of this heat may powerfully further the progress of vegetation, by stimulating the vital principle of the embryo, till its leaves unfold and assume their functions.” Whether this conceit be true or not, it is certain that germination may be much advanced by the application of artificial heat : and seeds have in this way been made to vegetate in three hours, which under ordinary circumstances require twelve.

CHAPTER II.

ORIGIN OF ANIMAL LIFE.

WE have given the process and gradual development of vegetable life, from the seed, through its different stages, to the period of maturity. The next subject in order is the origin and development of animal life, which is analogous to it.

All the researches made upon the subject tend to establish one great law of Nature, viz., that there is a similarity or analogy between the reproduction of vegetable, animal, and human life ; and very strikingly

between the ova or eggs of the mammalia, or higher, and those of the lower classes, more especially of birds, which afford the best opportunity of investigating the subject. Hence we have chosen the egg of the hen in illustration. A writer on this subject remarks, that "at the earliest periods, the human ovum bears a perfect analogy to the eggs of fishes, amphibia, and birds; and that it is only by a careful examining of the changes produced by the impregnation of the eggs of these lower classes of animals, that we have been enabled to discover them in animals and the human subject. It is interesting, then, to trace this analogy."

On opening a fowl, we discover a large yellow cluster of ova, or eggs, varying in size from the smallest seed to the full-grown egg, the largest of which is seen entering the ovisac, which corresponds with the fallopian-tubes of the female; and as the egg passes down the tube, it acquires a white covering, which becomes hard and dense, called the shell. In this state it is expelled.

If it has been impregnated by the male, incubation may follow; otherwise, not.

From the evidence we have, it is precisely so with the human female, as we have elsewhere stated. The first or primitive trace of the embryo is in the germinal membrane which contained the germinal vesicle before its disappearance. In the centre of this, upon its upper surface, may be discovered a small, dark line. This line or primitive trace is swollen at one extremity, and is placed in the direction of the transverse axis of the egg. The impregnated yolk is retained in its capsule or covering, in the ovary, precisely as in the human female subject—the whole of which has a clustered appearance, like a bunch of grapes. The rupture of the germinal vesicle, containing the female germ, has been supposed by Mr. T. W. Jones to take place before impregnation, which appears the most reasonable. According to this, then, the elementary principles of the embryo furnished by the female must pass out of the ovary, and into the fallopian-tubes or ovisac, and come in contact with the seminal fluid of the male, before it is impregnated.

We shall next describe the changes that take place in the progress of—

INCUBATION.—The following progressive series of phenomena are daily observable during the progress of incubation, in the egg of the common fowl: In an impregnated egg, previous to the commencement of incubation, a small spot is discernible upon the yolk, composed apparently of a membranous sac or bag, containing a fluid matter, in which swims the embryo of the future chick, and seemingly connected with other vesicles around it.

First day. In a few hours after exposure to the proper temperature, the microscope discovers that a humid matter has formed within the limits of the embryo. At the expiration of twelve or fourteen hours, this matter bears some resemblance to the shape of a little head; a number of new vesicles also successively appear, foreshadowing the different parts of the future body of the chick: those first formed, and most easily distinguished, may afterward be recognised as assuming the shape of the vertebral bones of the back.

Second day. The eyes begin to make their appearance about the thirtieth hour; and additional vessels, closely joined together, indicate the situation of the navel. The brain and spinal marrow, rudiments of the wings, and principal muscles, become observable. The formation of the head is also evidently proceeding.

Third day. The beating of the heart is perceptible, although no blood is visible; after a few hours, however, two vesicles containing blood make their appearance—one forming the left ventricle, the other the great artery. The auricle of the heart is next seen, and in the whole pulsation is evident.

Fourth day. The wings now assume a more defined shape, and the increased size of the head renders the globules containing the brain, the beak, and the front and hind parts of the head, distinctly visible.

Fifth day. The liver makes its appearance, and both auricles, now plainly seen, approach nearer the heart than before. That splendid phenomenon, the circulation of the blood, is now evident.

Sixth day. The lungs and stomach are now distinguishable, and the full gush of blood from the heart is distinctly apparent.

Seventh day. The intestines, veins, and upper mandible, become visible, and the brain begins to assume a distinct form.

Eighth day. The beak for the first time opens, and the formation of flesh upon the breast commences.

Ninth day. The deposition of matter forming the ribs takes place, and the gall-bladder is perceptible.

Tenth day. The bile is distinguishable by its green color, and the first voluntary motion of the body of the chick is seen, if separated from its integuments.

Eleventh day. The matter forming the skull now becomes cartilaginous, and the protrusion of feathers may be noticed.

Twelfth day. The orbits of sight are apparent, and the ribs are perfected.

Thirteenth day. The spleen gradually approaches to its proper position in the stomach.

Fourteenth day. The lungs become enclosed within the breast.

Fifteenth, sixteenth, and seventeenth days. During these days, the infinity of phenomena in this wonderful piece of vital mechanism elaborate it into more perfect form, and it presents an appearance closely approaching the mature state. The yolk of the egg, however, from which it derives its nourishment, is still outside the body.

Eighteenth day. The outward and audible sign of developed life is apparent, by the faint piping of the chick being for the first time heard.

Nineteenth, twentieth, and twenty-first days. Continually increasing in size and strength; the remainder of the yolk gradually becomes enclosed within its body; then, with uncommon power, for so small and frail a being, it liberates itself from its prison in a peculiar and curious manner, by repeated efforts made with its bill, seconded by muscular exertion with its limbs, and emerges into a new existence.

The position of the chicken in the shell is such as to occupy the least possible space. The head, which is large and heavy in proportion to the rest of the body, is placed in front of the abdomen, with its beak under the right wing; the feet are gathered up like a bird trussed for the spit: yet in this singular manner, and apparently uncomfortable position, it is by no means cramped or confined, but performs all the necessary motions and efforts required for its liberation with the most perfect ease, and that consummate skill which instinct renders almost infallible.

The chicken, at the time it breaks the shell, is heavier than the whole egg was at first.

An egg will not hatch *in vacuo*.

The infinite wisdom of the Great Architect of the animal frame is remarkably manifested in its providing the chick with a sharp and hard substance on the tip of the bill, by means of which it is enabled to fracture the shell, to liberate itself from its imprisonment. Its own bill is too soft to enable it to break the shell therewith, and in two days or less this hard and pointed substance disappears, the young bird no longer requiring to use it.

Equally extraordinary and wonderful is the fact that the germ of the chick is provided with the ability to keep itself always on the top of the yolk of the egg, to the end that it may take the heat from the parent bird when setting, to produce incubation.

Such is the process of incubation!—such the interesting nature of the phenomena displayed by it—phenomena so magnificent and so pregnant with wonders, as to fill with admiration and awe alike the mind of the profoundest philosopher and the least contemplative of the human race. Nor is it possible that the most unintelligent Christian can survey them with indifference, and his reflections thereon not lead him—

“Through Nature up to Nature’s God!”

The following additional facts are taken from the British “Provincial Journal:”—

“The progress of the incubation of the chicken is a subject curious and interesting. The hen has scarcely sat on the egg twelve hours before some lineaments of the head and body of the chicken appear. The heart may be seen to beat at the end of the second day: it has at that time somewhat the form of a

horse-shoe, but no blood yet appears. At the end of two days, two vesicles of blood are to be distinguished, the pulsation of which is very visible ; one of these is the left ventricle, and the other the root of the great artery. At the fiftieth hour (two days and two hours), one auricle of the heart appears, resembling a noose folded down upon itself. The beating of the heart is first observed in the auricle, and afterward in the ventricle. At the end of seventy hours (two days and twenty-two hours), the wings are distinguishable ; and on the head two bubbles are seen for the brain, one for the bill, and two others for the fore and hind part of the head. Toward the end of the fourth day, the two auricles, already visible, draw nearer to the heart than before. The liver appears toward the fifth day. At the end of a hundred and thirty-one hours (five days and eleven hours), the first voluntary motion is observed. At the end of seven hours more (that is, five days and eighteen hours), the lungs and stomach become visible ; and four hours after this (five days and twenty-two hours), the intestines, the loins, and the upper jaw. At the hundred and forty-fourth hour (or at the end of the sixth day), two ventricles are visible, and two drops of blood instead of the single one as seen before. The seventh day, the brain begins to have some consistency. At the hundred and ninetieth hour of incubation (seven days and twenty-two hours), the bill opens, and the flesh appears in the breast ; in four hours more (eight days and two hours), the breast-bone is seen ; and in six hours after this (eight days and eight hours), the ribs appear forming from the back, and the bill is very visible, as well as the gall-bladder. The bill becomes green at the end of two hundred and thirty-six hours (nine days and twenty hours) ; and if the chicken be taken out of its coverings, it evidently moves itself. The feathers begin to shoot out toward the two hundred and fortieth hour (ten days), and the skull becomes gristly. At the two hundred and sixty-fourth hour (eleven days), the eyes appear. At the two hundred and eighty-eighth (twelve days), the ribs are perfect. At the three hundred and thirty-first (thirteen days and nineteen hours), the spleen draws near the stomach, and the lungs to the chest. At the end of three hundred and fifty-five hours (fourteen days and nineteen hours), the bill frequently opens and shuts ; and at the end of the eighteenth day, the first cry of the chicken is heard. It afterward gets more strength, and grows continually, till at length it is enabled to set itself free.

“ In the whole of this process we must remark that every part appears exactly at its proper time. If, for example, the liver is formed on the fifth day, it is founded on the preceding situation of the chicken, and on the changes that were to follow. No part of the body could possibly appear either sooner or later, without the whole embryo suffering ; and each of the limbs becomes visible at the proper moment.

“ This ordination, so wise and so invariable, is manifestly the work of a Supreme Being : but we must still more sensibly acknowledge his creative powers, when we consider the manner in which the chicken is formed out of the parts which compose the egg. How astonishing must it appear to an observing mind, that in this substance there should be at all the vital principle of an animated being !—that all the parts of an animal’s body should be concealed in it, and require nothing but heat to unfold and quicken them !—that the whole formation of the chicken should be so constant and regular !—that exactly at the same time, the same changes will take place in the generality of eggs !—that the chicken, the moment it is hatched, is heavier than the egg was before !

“ But even these are not all the wonders in the formation of the bird from the egg (for this instance will serve to illustrate the whole of the feathered tribes) ; there are others, altogether hidden from our observation : and of which, from our very limited faculties, we must ever remain ignorant.”

CHAPTER III.

ORIGIN OF HUMAN LIFE.

THERE is no subject, either in natural history or physiology, more interesting to the philosopher than that of the reproduction of our species. No man, with even a superficial knowledge of its wonderful phenomena, can meditate upon it without being forcibly impressed with the most profound sentiments of veneration and awe, and being irresistibly led to adore the wisdom and power of the Great Author of this mysterious and wonderful process.

In all ages of the world, the manner in which conception takes place has been investigated by the most learned and powerful minds; and at this very time the subject is engaging the profound attention of the learned anatomists and physiologists of Europe and of the world.

From the abstruse nature of the subject itself, and the almost insurmountable difficulties by which a full investigation of it is surrounded, we need not be surprised that various and contradictory theories have been advanced respecting it.

But from the uniformity of Nature's laws, as we have seen, in the reproduction of plants and animals, and from the vast many dissections which of late years have been made, we are at length enabled to arrive at conclusions which, if not in every respect perfectly accurate, are nevertheless satisfactory, and generally demonstrable.

There are some facts connected with this subject that are shown as clearly as are any principles of physiology. And from the results of the laborious investigations of many learned physiologists, both ancient and modern, together with our own researches, we believe we shall be enabled to present the subject before the world in a tolerably clear and satisfactory manner. This we propose to do by fair, analogical reasoning, founded upon innumerable experiments, and on universally-admitted anatomical facts.

It is obvious to every one that there exists a strong and general tendency in the opposite sexes to unite, under the powerfully-impelling influence of the principle termed love. Without this universal stimulus implanted in the human organization, which, like that of hunger, does not depend upon the will, there would be little or no procreation of the human species. This fact admitted, we shall proceed briefly to show in what manner this takes place; and shall treat first of the parts or organs concerned in reproduction.

SECTION I.

THE MALE ORGANS.

BEFORE speaking of the function, we shall briefly describe the anatomical structure of the male organs of reproduction, which furnish the seed or living principle.

The preparation of the seminal fluid is the office of the two glandular bodies called the testicles or *testes*. They are suspended in a portion of common integument having the form of sac, termed the *scrotum*, by a round band, called the spermatic cord, which pursues a very serpentine course; a plexus of veins, the assemblage of which has received the name of *corpus pampineforme*, consisting of the sper-



15th day



18th day



17th day



16th day



22nd day



20th day



19th day



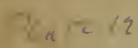
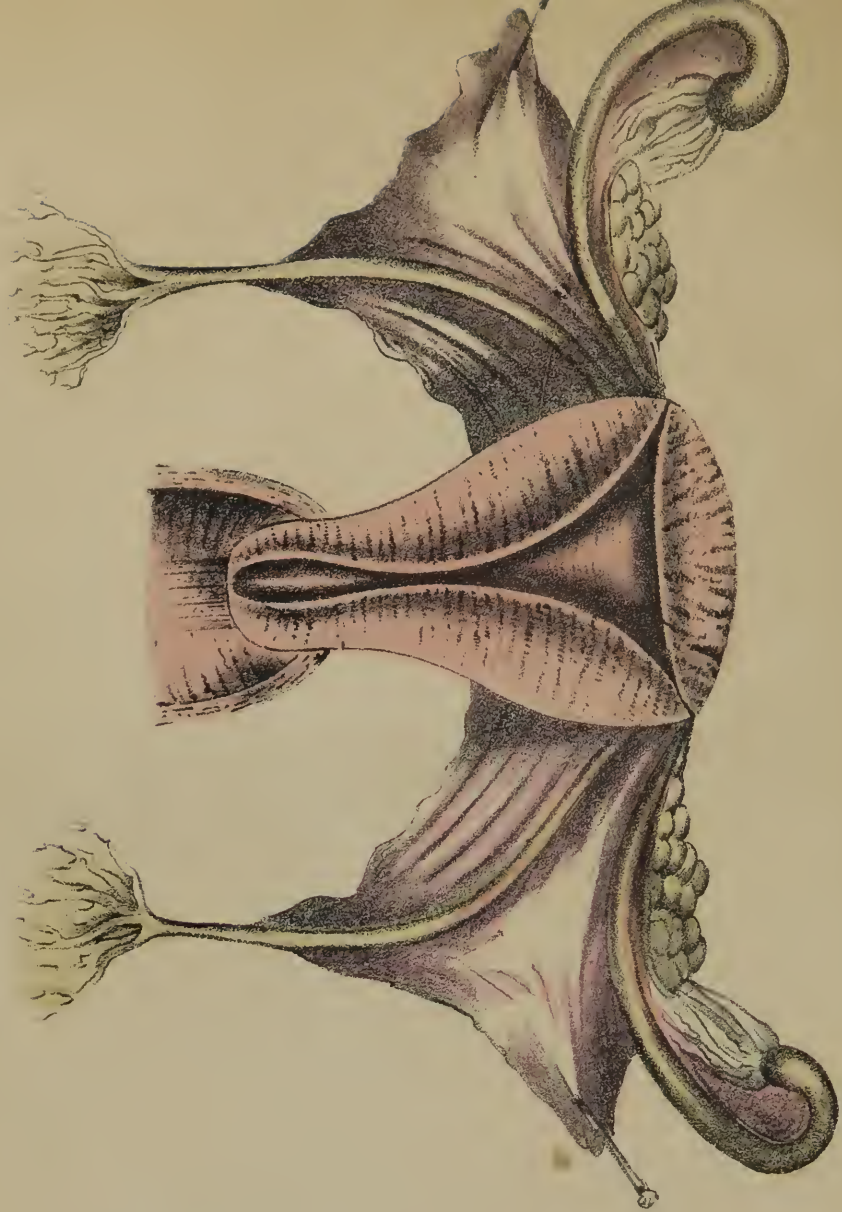




Plate 18.





matic artery, a plexus of absorbents, a plexus of nerves, and lastly the *vas deferens*, or excretory duct; and they are further supported by a sub-cutaneous layer of muscular fibres, termed the *dartos*. The scrotum is divided into two chambers, one testis being lodged in each, by a membranous partition, or *septum*. Each testicle is loosely contained in a sac, formed by an external serous membrane, the *tunica vaginalis*, derived from the peritoneum, which forms a cavity for its reception similar to that of other serous membranes. This tunic is reflected, like those of other cavities, over the body of the organ; and the reflected portion, which is called, from its white color, the *tunica albuginea*, forms the proper capsule of the testis. When this latter tunic is divided, the testis is found to consist of a flattened oval substance, to the upper, outer, and back part of which a narrow and flat slip of substance, called the *epididymis*, is found adherent.

The substance of the testicle is extremely vascular, and the ultimate branches of its spermatic arteries are collected into small bundles of fine convoluted vessels, separated from one another by *septulae*, or membranous partitions. From these the *vasa seminifera*, or beginnings of the excretory ducts, take their rise, and gradually unite to form a smaller number of canals of larger diameter, but exceedingly tortuous in their course. On arriving at the surface and back part of the testicle, they suddenly become straight, assuming the name of the *vasa recta*; they, however, again subdivide, and their branches have very numerous communications with one another, composing the net-work of tubes called the *corpus highmorianum*, or the *rete testis*. From the rete testis arise the ducts denominated the *vasa efferentia*, which, after being again contorted into numerous convolutions, form the conical bodies called *coni vasculosi*; these, again, alternately join to form the epididymis, already mentioned, which consists of one slender tube, of enormous length, coiled upon itself into a small compass.* The epididymis at length emerges, in the form of a tube of larger diameter, which is the *vas deferens*, and which ascends along the spermatic cord toward the abdomen. On tracing these ducts into the pelvis, we find them passing up by a circuitous route through the spermatic passage, and on reaching the pelvis, again descending by the lower side of the bladder, to the under part of its cervix. Each duct is here connected with an oblong membranous bag, called the *vesicula seminalis*, which is a long blind sac, folded many times upon itself; its open extremity entering the vas deferens at an acute angle. These sacs are supposed to be receptacles for the retention and accumulation of semen, until the time when it is required to be expelled. But Hunter remarked that the fluid contained in them is somewhat different from that obtained from the seminal ducts of the testicle itself; and he therefore supposed that these vesicles secrete a peculiar fluid which may perhaps dilute and add to the bulk of the semen. He even contended that the proper office of these cavities is not that of reservoirs of semen: supporting his opinion by arguments derived from comparative anatomy, which furnishes many examples where no direct communication exists between them and the vas deferens, and others where these vesicles are entirely absent. Notwithstanding these analogies, the prevailing opinion is in favor of the vesiculæ seminales in man being reservoirs of the seminal secretion.

From the vesiculæ seminales and the vas deferens, the semen is occasionally discharged through a duct common to both, and about half an inch in length, which perforates a body called the *prostate gland*, and then opens on each side into a canal, termed the *urethra*, which is continued from the urinary bladder, close to a small eminence in that canal, termed the *verumontanum*, or *caput gallinaginis*. The prostate gland is of the size of a small chestnut; in shape it resembles a heart, with the apex directed forward. Its texture is firm and tough; it is divided into two lateral lobes and one anterior lobe, and contains a great number of follicles, into which a white opaque viscid fluid is secreted. This secretion is discharged by ten or twelve excretory ducts opening obliquely into the urethra, in a furrow at the side of the verumontanum.

The urethra is a canal, lined by a mucous membrane, serving the double purpose of discharging the urine and the semen. As it proceeds forward from the neck of the bladder, it passes through the pros-

* The whole length of the excretory vessels of the testes is very extraordinary. Their diameter has been stated to be no greater than the two hundredth part of an inch; and it has been estimated that the total length of the vessels which compose one of the testes amounts to more than five hundred feet.

tate gland, on emerging from which it becomes more contracted in its diameter, and passes under the symphysis pubis. At this part, for the length of about an inch, it is supported only by firm cellular and ligamentous membranes; this part of the canal is termed the *membranous portion* of the urethra. It is then dilated into what is called the *bulb*, or *sinus* of the urethra; and it afterward receives the ducts of several mucous glands, which have been denominated the *glands of Cowper*, and which are generally very minute, but sometimes have the size of peas. One of these is placed on each side of the membranous portion of the urethra, below which they are united by an isthmus; and the duct of each, about three inches in length, opens by perforating the mucous membrane lining the spongy body of the penis. Mucus is also furnished to various parts of the canal by *lacunæ* provided for that purpose. At its bulbous part, the urethra takes a considerable curve forward, and is surrounded in the rest of its course by a peculiar erectile texture, denominated the *corpus spongiosum urethræ*. This substance is expanded, at the extremity of the penis, into what is termed the *glans*, which is covered by a fold of the skin called the *prepuce*. The *corpora cavernosa* are the cylindrical bodies which compose the chief bulk of the penis. They arise by two *crura*, one from each ascending ramus of the os ischii, and are chiefly composed of the peculiar structure termed the *erectile tissue*. At its extremity, the urethra is considerably narrower than where it passes along the corpus spongiosum.

These parts, namely, the glans and corpora cavernosa penis, and the corpus spongiosum urethræ, consist principally of large convoluted veins, which in the last-named part are particularly dilated and branched, and are bound together and crossed in various directions by ligamentous bands and fibres. This arrangement, by obscuring the connexions which the veins have with one another, as well as their tortuous course, has led to the mistake that has so long prevailed among anatomists, of ascribing to these bodies a cellular structure. These bands appear to have been provided for the purpose of limiting the distention of the vessels, and adding to the rigidity occasioned by the accumulation of blood in the venous convolutions during erection. The means by which the blood is made to pass from the small arteries into these convoluted veins, is not clearly understood. Professor Müller* has lately discovered a remarkable set of minute dilated and ramified branches, which he terms *arteriæ hellicinæ*, and which are appended to the terminal twigs of the arteries distributed on the sides and interspaces of the venous cavities in the penis of man and several animals, and which he represents as projecting into the interior of the veins, and pouring their blood into them; a mechanism which must doubtless have some direct relation with the process of erection.† Dr. Houston‡ has described some muscles, under the name of *compressores venæ dorsalis penis*, to the contraction of which, and the consequent impediment to the return of the blood from the penis, he attributes the erection of that organ. It is more probable, however, that this effect is produced principally by an altered action of the blood-vessels themselves, and is analogous to the turgid state of the vessels which occurs in blushing, than is owing to any mechanical cause. The purpose served by the dilatation, elongation, and rigidity, of the male organ, effected by this vascular action, is obviously that of enabling it to penetrate to a sufficient distance into the female organ during coition, for the conveyance of the semen to the uterus. With this view, the secretions from the testes, vesiculæ seminales, prostate gland, and the glands of Cowper, are poured together into the bulb of the urethra, and thence expelled with force by the action of the muscles called the *ejaculatores seminis*.

The seminal fluid, which acts so important a part in the process of generation, has at all times attracted much attention. It is found to be considerably heavier than water, and to have a peculiar odor, which increases on keeping; to exhibit alkaline properties, and to give off ammonia when heated. From the analysis of Vauquelin, it appears that human semen contains six per cent. of animal mucus, three of

* Archiv. für Physiol. &c., 1835; pp. 27 and 220.

† The researches of Valentin (Müller's Archiv., and Lond. Med. Gaz. June 23, 1838, p. 543) are not in accordance with those of Müller. The result of numerous examinations has convinced him that the helicine arteries are not peculiar vessels, but merely minute arteries that have been divided or torn, and that the real distribution of the vessels of the corpora cavernosa follows, in every respect, the most simple laws.

‡ Dublin Hospital Reports, vol. v.

phosphate of lime, and one of uncombined soda; the rest being water. The phosphate of lime is deposited in crystals when the fluid is at rest.

The *spermatozoa* are minute filamentous bodies, set free by the rupture of the spermatie cells, and are distinguished by their power of spontaneous movements; which occasioned them to be long regarded as proper animalcules. It is now clear, however, from the history of their development, as well as from other considerations, that they can not be justly regarded in this light; and that they are analogous to the reproductive particles in plants, which, in many cases, exhibit a spontaneous motion of extraordinary activity after they have been set free from the parent structure.

The human spermatozoa consist of a little oval flattened body, from the one six hundredth to the one eight hundredth of a line in length, from which proceeds a filiform tail, gradually tapering to a very fine point of one fiftieth, or, at most, one fortieth of a line in length. The whole is perfectly transparent; and nothing that can be called structure can be satisfactorily distinguished within it. The movements are principally by the undulations of the tail, which give a propulsive action to the body. They may continue active for many hours, if they are not checked by cold, or by admixture with urine or other secretions. When the seminal fluid remains in contact with a living surface, such as the generative organs of the female, the spermatozoa may retain their vitality for some days.

SECTION II.

THE FEMALE ORGANS.

THE female organs which subserve the purposes of reproduction are commonly divided into two classes—the external and internal. By the external organs, are meant such as can be seen and inspected without dissection; the internal are such as are contained within the pelvis, and can not be all brought into view without the assistance of the knife. The external organs are—the *mons veneris*; the *labia pudendi*; the *perineum*; the *clitoris*; the *nymphæ*; the *vestibule*; the *meatus urinarius*; the *hymen*; the *carunculæ myrtiformes*.

MONS VENERIS.—This is situated at the lower part of the abdomen, from which it is separated by a groove, more or less marked in proportion to the corpulency of the woman, and bounded on the sides by the folds of the groins. It lies immediately over the *os pubis*, and consists of cellular and adipose tissue, forming a soft, cushion-like eminence, of a triangular form, about three inches in breadth and two in depth, and at puberty it is ornamented with a number of short hairs. Its degree of prominence is regulated by a variety of circumstances. It is more prominent in young and vigorous females who have not borne children, than in such of the sex as are advanced in age, or are the mothers of a family. During coition, and on the approach of the menstrual period, it is more elevated than when the individual is not under the influence of any excitement. It is more prominent in young females in tropical climates than in those of equal age in this country.

LABIA PUDENDI.—At the inferior or lower portion of the *mons veneris*, it bifurcates or divides, and passes down on each side, and thus form the *labia pudendi*, or lips; which become thinner as they pass downward and backward toward the *anus*, and at about one inch from which they again unite, and the union is called the *fourchette*. The *labia* are composed of the same tissue as the *mons veneris*, and are influenced by coition and by other irritation in the same manner; and, like it, are covered with hairs at puberty. Internally they are lined with a smooth, shining mucous membrane, of a vermilion color (resembling the lining of the lips or mouth), and of great sensibility in young women; but, as they advance in age, its color becomes dark, and the sensibility gradually fails. This membrane is very vascular, and is abundantly supplied with glands and follicles, which furnish a considerable quantity of mucus to protect the inner surface of the organs from the effects of friction, and from the acidity of the urine. They serve, in the ordinary condition, to protect the parts within from the effects of air and

external agents ; and also, during the passage of the child, their folds dilate, and increase the capacity of the vulva, till it equals that of the bony outlet of the pelvis.

In the natural state of the parts, its opening, formed by the separation of the lips, is called the *fossa magna*, in which are contained several other of the external genital organs. Toward the posterior union of the labia the opening becomes larger and deeper ; and, from its resemblance to a small boat, is called the *fossa navicularis*.

THE PERINEUM.—This term is applied to that part between the posterior commissure of the *vagina* and the *rectum*. Its breadth, in the quiescent state, is generally from one to one and one fourth inches ; but during parturition it is extended from four to five inches ; and in consequence of its being chiefly composed of muscular fibre, its contractions are very rapid. From the vagina to the anus, something resembling a seam runs along the perineum, which is termed the *raphe*.

THE CLITORIS.—When we separate the labia pudendi, other of what are called the external organs are brought to view : among which are, first, the clitoris, which is a small body of a vermilion hue, that projects from the symphysis pubis at the commencement, and just at the superior bifurcation of the labia pudendi. In construction and formation it bears a great analogy to the male penis. It resembles it, indeed, in every respect except two : its small size, and its not being perforated by the urethra. Like the male penis, it is composed of two crura, which arise from the ramus of the oschia and pubis ; one on each side runs up to the junction of the symphysis pubis, and there form the corpora cavernosa. These are also furnished with two muscles resembling the erectoris penis in the male. At the extremity of the corpora cavernosa is placed the gland ; this is the only part of the organ which we can observe by the eye, the others being imbedded between the mucous membrane and the bone. It is liberally supplied with blood from the pubic artery, and with nerves from the pubic vaciculi. It is the seat of pleasure during coition, or when, from any cause, the passions are excited ; on which occasions its cells become distended, and the organ itself enlarged. Titillation and friction cause a distention of this body, which is followed by a discharge from the vagina. And this practice has been known to be persisted in to such an extent by some young girls, as to produce marasmus, for the removal of which, and the prevention of other injurious effects, the excision of the clitoris, it is stated, has alone proved effectual.

The size of this organ varies exceedingly in females in different parts of the world. Its size in females in this country varies from a quarter to a full inch. It is larger in proportion in infants than in adults. It is longer in warm than in temperate latitudes. In some hot countries it has been met with of almost incredible length—even equal to that of the male penis ! This unusual size of the clitoris has led to the supposition that they were hermaphrodite.

THE NYMPHÆ.—These are sometimes also called the *labia minora*. They are situated within the labia pudendi. In shape they resemble a cock's comb ; they surround and form a prepuce for the clitoris, and become narrower as they pass downward ; and they are lost about the middle of the orifice of the vagina.

They are covered with mucous membrane ; internally they are composed of erectile tissue styled *corpus cavernosum*, and a congeries of blood-vessels. When the passions of the individual are excited, the nymphæ become enlarged and tense, and are endowed with a considerable degree of sensibility. They also serve to direct the course of the urine. In healthy young girls, the nymphæ are smooth, firm, and roseate ; flaccid and pale in women of lymphatic temperament and those affected with leucorrhœa ; they are granulated and dark in brunettes.

Generally speaking, the nymphæ are enclosed within the labia pudendi, but sometimes they are very much elongated. This elongation of the nymphæ, which occasionally occurs in this country, occurs especially among some tribes in Africa, such as the Moors and the Copts, who consequently cause the organs to be circumcised ; but, in the Hottentots, the nymphæ are so prodigiously elongated, as to form a kind of apron extending four or five inches below the margin of the labia.

THE VESTIBULE.—Just at the top of the pubic arch is a small bulbous projection, which encloses the surface of the urethra. The triangular space included between the bulb and the nymphæ is called

the *vestibule*. It is of importance to understand its position, because it is one of the guides in introducing the catheter through the urethra.

THE MEATUS URINARIUS.—This is situated in the vestibule, about three fourths of an inch below the clitoris, immediately above the vagina. The urethra is a canal, about one and a half to two inches in length; in its course toward the bladder it is very slightly curved, but during gestation its direction is affected by the particular position of the uterus. During the early months, the urethra will rise almost perpendicularly behind the pubes; but in advanced gestation, the bladder is often thrown forward over these bones, which occasions a considerable curve in the urinary canal, a circumstance which ought ever to be remembered in passing the catheter.

THE HYMEN.—This is a duplicate fold of the fine villous membrane which lines the canal or vagina. It is spread across the mouth of the vagina, just within its entrance. It differs very much in appearance in different females: in some it appears in the shape of a crescent, or half moon; in others it completely covers the entrance of the vagina, having a small aperture in the centre; in a third class, the hymen forms a cruciform septum; in a fourth, it may be found in the shape of a strong membranous band, extending from the pubic to the perineal surface of the canal; and, in the fifth, it may completely intercept the vagina, a condition which may remain unknown—and when the catamenia are secreted, it will prevent their discharge, and produce incalculable mischief to the constitution by their retention. The state of the hymen should always be a point which we should examine in all cases of retention of the menses in young girls when they have never flown. Sometimes, it is stated, this membrane is so firm, that the husband can not rupture it, and it has to be divided by the surgeon before the nuptial rites can be consummated. The presence of the hymen was the Mosaic test of virginity, and the Jews and many others to this day attach strong suspicions of incontinence to those in whom this test is wanting. Perhaps its texture is more uniformly strong among the Jewesses than it is among the females of this country; for while no females are born without it, that many in this country do not retain it till marriage, is no less certain, who yet never had intercourse with a man; in some it is so slender, that it has been said to be broken by the nurse, in wiping the parts, after washing the infant. But there can be no doubt that the too common practice of onanism among our unmarried females is a very frequent cause of rupture of the hymen, where their chastity has never been violated by any of the male sex.

THE INTERNAL ORGANS OF REPRODUCTION.—These are contained within the pelvis, and can only be examined by plates and models. They consist of the *vagina*; the *uterus*; the *Fallopian tubes*; and ligaments by which the uterus is retained *in situ*.

THE VAGINA.—This is a muco-membranous canal, running from the external organs of generation up the centre of the pelvis, to about one inch above the *os uteri*. It describes a curve, like the sacrum; its length varies from three to six inches or more. At its mouth, we find muscular fibres, forming a species of sphincter, called the *sphincter vagina*. At about an inch from its mouth we find its narrowest part: it is there formed of erectile tissue, and it is called the *plexus rectiformis*. Its internal surface is lined with a soft villous mucous membrane, which, especially in young subjects after puberty, is laid in longitudinal and transverse folds or *rugæ*; which, with the erectile tissue, is designed to increase the mutual pleasure during coition: and, in labor, to unfold and expand its *rugæ*, and thus allow the child's head to pass.

It has also, between the folds, many orifices of mucous glands, which serve to lubricate the parts; but by the frequent use of venery, and still more in consequence of frequent child-bearing, the folds become more and more obliterated, until, in old women, who have borne many children, they are scarcely perceptible. The upper or superior wall of the vagina is in immediate contact with the *peritonæum*, which separates it from the cavity of the abdomen. This is the weak spot, and that in which so much injury is sometimes done by instruments; and which requires our utmost care when an operation is really necessary: as any injury inflicted here will generally be followed by inflammation and death.

THE UTERUS.—This is a flattened pyriform body, from two inches and a half to three inches in length, one inch in thickness from before, backward, and one inch and a half in breadth at its upper

(broad) extremity. It is divided, for the purpose of description, into the *fundus*, which is the upper and broadest part; the *cervix*, or lower extremity; the *body*, which is that portion between the fundus and cervix; and, lastly, the *os uteri* or *os tinæ*, an opening situated at the termination of the cervix, and leading from the vagina to the cavity.

The substance of the uterus is from one third to three quarters of an inch in thickness, and is composed of a peculiar dense, grayish, fibrous tissue, containing abundance of nerves, blood-vessels, and lymphatics. Upon cutting into it, we observe that it contains numerous sinuses. The fibres of the unimpregnated uterus can not be observed to follow any regular course: they possess all the powers, and most of the appearances, of muscle; although it is a favorite whim with certain anatomists to deny them the name.

Within the solid walls of the uterus a cavity is formed, triangular in that portion contained in the fundus, and with its lower angle prolonged into a narrow canal, which passes through the body and cervix to the os tinæ. At the upper angles on each side are situated the openings of the Fallopian tubes. The whole cavity is lined by mucous membrane, continuous with that of the vagina. In the young subject, this is arranged into folds; it has numerous mucous lacunæ, particularly in the cervix.

The os uteri is a transverse slit in the lower extremity of the cervix, varying in length from three to eight lines. It has two lips, which in the virgin are smooth, but, in persons who have had children, frequently present a tuberculated and irregular feel. In the neighborhood of the os are situated some follicles, termed the *glandulæ Nabothi*, which secrete a tough sebaceous matter, and are supposed to be the seat of the cancer that occasionally attacks this part.

The situation of the uterus is near the middle of the pelvis, between the bladder and rectum, its axis coinciding with that of the brim. It is covered on both sides by peritoneum, and is held in situ by the following ligaments; the broad ligaments, which are merely folds of peritoneum, passing off from the sides of the womb to the sides of the pelvic cavity; each is formed by two layers of peritoneum, between which are situated, at the upper margin, the Fallopian tubes and ovaries, and, lower down, the vessels and nerves of the organ. The anterior and posterior ligaments are also folds of peritoneum passing off respectively upon the bladder and rectum. The round ligaments differ from any of the former: they pass off on each side from the fundus uteri, close to the insertion of the tubes, and, passing out of the abdomen through the inguinal ring, are lost upon the mons veneris and labia; they are composed of a number of blood-vessels, lymphatics, nerves, and cellular substance, and form a thick round cord. The use of these ligaments has been much disputed. By Sir C. Bell they have been ingeniously supposed to answer the purpose of tendons, and to furnish a fixed point for the two circular muscles, which he has described as existing at the fundus of the womb. Professor Jorg, of Leipsic, believes that they communicate sensation from the clitoris to the Fallopian tubes and ovaries at the moment of coition, so as to establish a consent of all the parts concerned in generation.

The *Fallopian tubes* are two firm cords, about four inches in length, formed of a spongy cavernous tissue, with blood-vessels, lymphatics, nerves, and probably muscular fibres. They contain a canal, which opens into the fundus of the uterus upon each side, by an opening merely large enough to contain a bristle. The canal enlarges as it runs toward the opposite free extremity, and opens into the cavity of the peritoneum, its termination being surrounded by fimbriæ, and denominated the *morsus diaboli* (or fimbriated extremity of the Fallopian tube). The tubes lie in the upper fold of the broad ligaments in a very tortuous manner.

The *ovaries* also lie in the upper fold of the broad ligament (or rather in a fold of the posterior layer of the ligament), behind the tubes; they are flattened whitish bodies, from an inch to an inch and a half long, resembling in appearance and feel the male testes. In the early fœtus this resemblance is so remarkable, that we can sometimes with difficulty distinguish whether the bodies lying in the lower part of the abdomen be actually ovaria or testes. The ovaries are composed of a peculiar cellular tissue, and each contains fifteen or twenty globular cells or vesicles, including a drop of albuminous fluid, and denominated the *vesiculæ Graafianæ* or *eggs*. Each of these vesicles is supposed to contain an ovum,

which escapes by the bursting of the peritoneal coat of the ovary at the moment of conception, leaving behind a small cicatrix. At the same period an oval glandular body is observed to be formed in the ovary, about one third of an inch in diameter, and resembling much the secretory portion of the kidney : this is named the *corpus luteum*. It continues to exist from the time of conception until three or four months after parturition, but of its uses we are nearly quite ignorant.*

In connexion with the foregoing description of the hard and soft parts immediately concerned in the generative function, it may be interesting to reflect upon the effects likely to be produced upon the other organs contained in the pelvis by the changes resulting from the exercise of this function. The uterus, we have seen, is situated between the bladder and rectum : and accordingly, as might have been expected, its enlargement frequently interferes with the action of both these organs. If the pressure particularly affect the former viscus, it will be found to occasion frequent micturition and other symptoms of irritation ; and when the part pressed upon is the urethra or neck of the bladder, retention of urine may be the consequence. In like manner, pressure upon the rectum may cause either tenesmus, pressing, or constipation, and by interfering with the free return of the blood, produce or aggravate piles. The great blood-vessels which traverse the pelvis in their course to or from the lower extremities, as well as the numerous lymphatics, are also frequently subjected to interruption of their functions from pressure of the enlarged uterus, to which may be traced the varices and edema of the limbs so common in pregnancy. The pressure, also, upon the great nerves, may satisfactorily explain the numbness and cramps of the legs frequently complained of during labor, and at the latter periods of gestation.

SECTION III.

MENSTRUATION.

DEFINITION.—Before proceeding immediately to the physiology of generation, there is one function of the female organs which will require some consideration : that is, the *menstrual* or *periodical discharge* from the womb, similar to blood, commencing at puberty, and continuing during the whole time a female is capable of conceiving ; occurring usually about every twenty-eight days, and continuing from three to six days : but in some it occurs every twenty-one days, and with others it runs every thirty-five days. This discharge is called by the sex by various names—as the *catamenia*, *menses*, *flowers*, *being unwell*, &c. It appears to be peculiar to the human species alone, although the celebrated F. CUVIER asserts that he has discovered indications of it in some females of certain animals, during their sexual season ; but by others this is considered nothing more than an exudation of bloody mucus.

SYMPTOMS WITH WHICH IT COMMENCES.—We have stated, in our definition of *menstruation*, that it first takes place at puberty, or that period at which the female is capable of propagating her species. This period must vary considerably, according as it may be influenced by climate, constitution, modes of life, &c. : always being some earlier in warm than in cold countries ; and sooner in cities than in the country. Before the *catamenia* makes its appearance, there is almost always an alteration in the condition of the female : the *mammæ* or breasts increase in size ; the voice undergoes a slight change ; the pubes are covered with hair ; and all the *best proportions which the individual is capable of* are now suddenly, as it were, developed. The mind also undergoes a complete change : childish amusements now yield to mature enjoyments and rational inquiry ; the attachments of caprice give place to sincere, unaffected, and permanent friendship ; in a word, a *new creature*, almost, seems to be *suddenly formed*. The yet nearer approach of the *catamenia* is still further announced by headache, dulness of the eyes, pains in the pelvic region, lassitude, capricious appetite, slight *fluor albus*, and frequent itching and slight irritation of the

* Sir E. Home supposed that corpora lutea might exist in the virgin.

parts. After these have continued for a longer or a shorter period, they suddenly cease, and a small quantity of fluid is discharged from the vagina, and that not much colored at first. Sometimes it comes on without any of these painful warnings. The last-named circumstance serves to explain those cases of impregnation which are said to have taken place previously to the eruption of the menses.

This discharge ceases in a short time, and is frequently succeeded by a sense of languor and faintness. After a few months, the same symptoms again commence; and after their thus occurring a few times, menstruation is fully established; subsequently to which they generally appear monthly, with great regularity, unless interrupted by pregnancy, lactation, or some diseases.

AGE OF ITS APPEARANCE.—It is said that, in Lapland, females do not begin to menstruate until after they are twenty years old; while in India they commence as early as nine or ten years. A celebrated traveller states that, “in Japan, he saw a number of little girls, with children either at the *breast*, or in their arms, their youthful appearance strikingly contrasting with their maternal occupation.” In Java, females are married when only about *nine or ten years old*. In this climate, the menses generally occur between the ages of twelve and sixteen.

PERIOD OF THEIR DURATION.—The period of their duration and consequent cessation is as various as that of their commencement. As a general rule, menstruation continues about *thirty years*; and, in this climate, usually *ceases* at about *forty-five*. The sex instinctively apprehend great danger at this period. When it is about to disappear, it becomes very irregular, both as to period and quantity. In medical history, we have an example of one female *who menstruated till she was ninety years old!* We have an example of another who ceased to menstruate for twenty years, and then commenced again, at the age of *seventy*, and *continued the secretion for many years!*

We extract the following remarks from “Lectures on Midwifery,” by Dr. Lee, of London:—

CHARACTER OF THE DISCHARGE.—The first appearance of the catamenia at the age of puberty, its suspension during pregnancy and lactation, and its cessation in advanced years, are circumstances which prove that it is intimately connected with the process of reproduction.

Some physiologists think that menstruation puts or preserves the uterus in a state fit for impregnation; but the function is never performed unless the uterus is previously in a healthy condition. It might be affirmed with equal truth, that the secretion of the bile puts or preserves the liver in a healthy state; the urine, the kidneys; and the gastric fluid the coats of the stomach. That the uterus can be in a fit state for conception without menstruation is proved by this fact—that some women have become pregnant who have never menstruated, and many have conceived during suckling who have not menstruated since their previous conception, or even during successive pregnancies and the intervals of suckling.

Some have attributed menstruation to the influence of the moon, to the upright position of women, to the presence of an undue proportion of azote in the blood of the uterus, fermentation of the blood, sexual desire, and many other hypothetical causes. It has been referred with greater reason, since the days of Aristotle, to a periodical plethora of the vessels of the uterus—a *molimen*, irritation, or effort of the uterine system every month—but no adequate cause has been assigned for this. The sensations usually experienced at the time the catamenia are present, and the examination of the bodies of those who have died from disease during menstruation, prove that the uterine arteries and veins are then distended with blood. Blood is not unfrequently extravasated with the catamenial fluid; and if the uterus be examined during the monthly period, it is usually found to be larger and heavier than during the intervals of menstruation. That something more than a mere determination of blood to the uterine system is required for menstruation will appear from the fact that suppression of the catamenia is not unfrequently produced by unusual congestion of the uterine vessels, and that the obstruction is removed by the local abstraction of blood.

That the determination of blood which takes place to the uterine system every month, and that all the phenomena of menstruation, depend upon the ovaria, and that at each period a Graafian vesicle bursts and its contents escape, is rendered extremely probable by the following facts:—

If the ovaria are wanting, or removed artificially, or have their healthy structure destroyed by disease, menstruation either never commences, or it entirely ceases. The case of a young woman who died at

PLATE B.

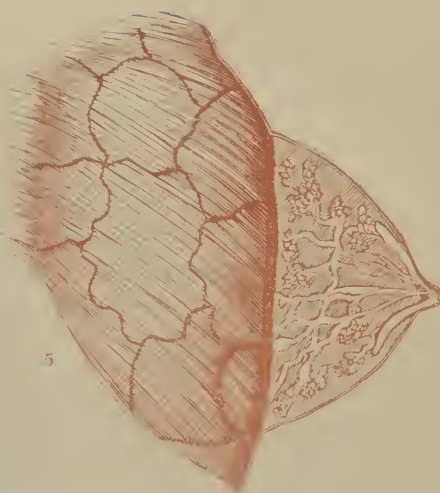
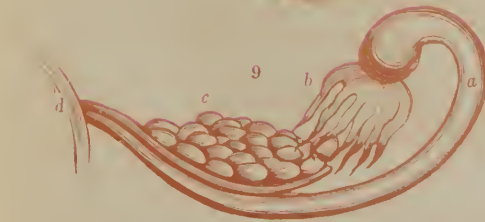
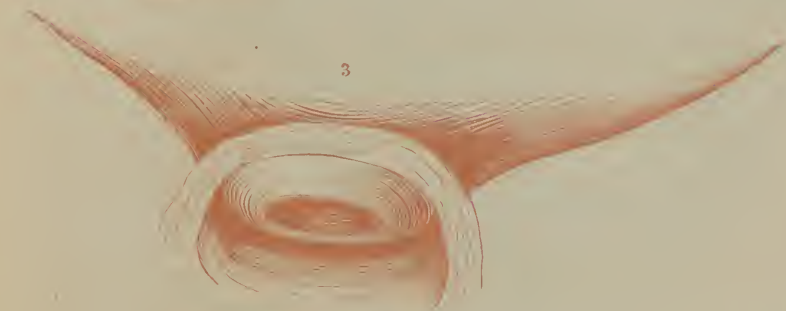
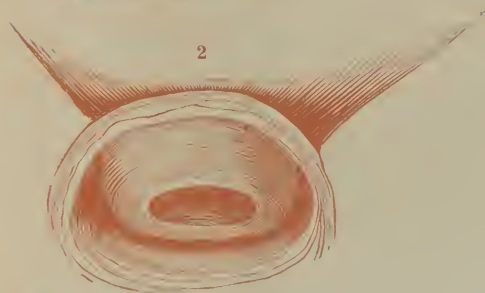
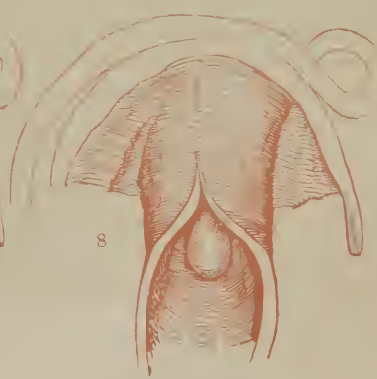


Fig. 1. Orifice of the Womb, in the first month of pregnancy.
 Fig. 2. Orifice of the Womb, in the seventh month of pregnancy.
 Fig. 3. Orifice of the Womb, in the last month of pregnancy.
 Fig. 4. Transverse, oblique, and longitudinal Muscular Fibres of the Womb.
 Fig. 5. Mammary Gland, showing the lacteal or milk tubes.
 Fig. 6. Turning the Child in the Womb.
 Fig. 7. Polypos or Tumor of the Uterus falling into the Vagina.
 Fig. 8. Prolapse, or falling of the Womb.
 Fig. 9. (a) The Vagina seizing an Ovary from the Ovary (c) and carrying it to the mouth of Fallopian Tube, (a) through which it is conveyed to the Uterus (d) for impregnation.





the age of twenty-nine, in whom the ovaria were wanting, was published by Mr. Charles Pears, in the "London Philosophical Transactions" for 1805, and the following appearances have been recorded: "Having ceased to grow at ten years of age, she was in stature not more than four feet six inches high. The breadth across the shoulders was as much as fourteen inches, but her pelvis measured only nine inches from the ossa illia to the sacrum; her breasts and nipples never enlarged more than in the male subject. She never menstruated, there was no appearance of hair on the pubes, nor were there any indications of puberty, in mind or body, at twenty-nine years of age."

In the young woman whose ovaria were extirpated by Mr. Pott, in an operation for inguinal hernia, the voice became hoarse, the mammae shrunk, and hair appeared on the chin and upper lip. Before the operation, this female was stout, large-breasted, and menstruated regularly.

Menstruation disappears if the structure of both ovaria be destroyed by any disease. In ovarian dropsy, if one ovary only be affected, menstruation continues until the powers of the constitution are greatly impaired, but if the disease exists in both ovaria from the beginning, the function is soon interrupted. The same effect is produced if the structure of the ovaria be disorganized by any other disease. A woman, aged twenty-one, died in 1836, in St. George's hospital, from tubercular phthisis, and both ovaria and Fallopian tubes were completely changed by scrofulous disease. She never menstruated, and the uterus was like the uterus of a child, with a long neck and small body. In many young women who die of chronic disease, the ovaria are flaccid, and extremely small. Something not very dissimilar to these effects in the human subject when the ovaria have been removed, has been observed by Mr. Yarrell in birds. He has shown that where there is a shrinking and shrivelling of the ovaria from disease in young birds, the hen-bird, in many instances, assumes the plumage of the male. Thus, in several mules (hen-birds with male plumage) the ovarium has been found variously diseased: sometimes the oviducts appear to have been inflamed, and adhesion to have taken place between their opposite sides, so that they become obliterated; at other times the ovaria are shrivelled, and of a black color, and appear as if they had never been in progress to maturity. This black color also pervades the oviduct, which is smaller than natural, and often impervious in some part. In old birds it might fairly have been alleged that the destruction of the ovarium and the change of plumage followed only the general obliteration induced by age, and that the one was not dependent on the other: but the fact that destruction by disease of the ovarium, in the young bird, induces a similar change, and the destruction of the oviduct by art being followed by an alteration, incomplete indeed, but, in many respects, resembling the one mentioned, sets the question at rest.

In cases where the uterus has been wanting, and the ovaria have been present and fully formed, women have usually experienced violent pains within the pelvis every month, and all the symptoms of menstruation have been present except the discharge.

In 1831, I saw a case, with Dr. Girdwood, in which there appeared to be a deficiency of the uterus, and an effort at menstruation every monthly period. The woman was twenty-five years of age, and had been married two years, though she had never menstruated. Every month there was great pain in the region of the pelvis, which lasted several days, and then went off, without any menstrual discharge taking place. The mammae and external sexual organs were fully developed. On examination at the posterior part of the vagina, the finger readily passed into a short cul-de-sac, about an inch and a half in length, but there was no uterus above.

Dr. Stein related a case several years ago to a medical society in Berlin, of a married lady, aged twenty-four, well formed, and the mammae fully developed, whose vagina was found imperforated; and in performing the necessary operation, no uterus could be discovered, but its place was supplied by a soft mass of cellular tissue. She had never menstruated, though there was a regular effort at each catamenial period. Other cases similar to these have been recorded by authors. One very distinct case of this kind came under the observation of Dr. Elliotson and Mr. Cline; there was no uterus, but there was excruciating pain about the pelvis every month; the ovaria had certainly been developed.

On the 11th of March, 1831, I examined the body of a young woman who died, during menstruation,

from inflammation of the median basilic vein. The left ovary was larger than the right, and at one point a small circular opening, with a thin irregular edge, was observed in the peritoneal coat, which led to a cavity of no great depth in the ovary. Around the opening, to an extent of three or four lines, the surface of the ovary was of a bright red color, and considerably elevated above the surrounding part of the peritoneal coat. On cutting into the ovary, its substance around the opening and depression was vascular, and several Graafian vesicles of different sizes were observed. The right ovary was in the ordinary state. Both Fallopian tubes were intensely red and swollen, and their cavities were filled with what appeared to be menstrual fluid. The lining membrane of the uterus was coated with the same fluid, and the parietes were soft and vascular. The size of the uterus was not increased. I pointed out this opening in the peritoneum of the ovary, which I accidentally discovered, to Dr. Girdwood and Dr. Prout, and suspected that there was some relation between this and the state of the uterus. At this time, I had not seen the human ovum in the Graafian vesicle before impregnation, and was not then aware that cicatrices are never present on the surface of the ovaria before menstruation has commenced.

In the autumn of 1831, Dr. John Prout saw a woman, under twenty years of age, who died suddenly from acute inflammation of the lungs while menstruating. He examined the body, and brought the uterine organs to me, having taken the greatest care that they should not suffer any force during their removal from the pelvis. A red, soft, elevated portion of the right ovary was also here observed, and at one part the peritoneal coat, to a small extent, had been removed. The edge of the opening was extremely thin and irregular; and in the substance of the ovary, under the opening, was an enlarged Graafian vesicle, filled with transparent fluid. Numerous small blood-vessels were seen running along the peritoneal coat of the ovary to the opening. When the substance of the ovary was laid open, several vesicles, of various sizes, and at different depths, were found imbedded in it. The left ovary presented a natural appearance. The free extremities of the Fallopian tubes were gorged with blood. Their cavities were filled with a red-colored fluid. The uterus was not enlarged, but the parietes were unusually full of blood, and the lining membrane of the fundus was coated with menstrual fluid. A small coagulum of blood likewise adhered to the upper part of the uterus. I now felt convinced that there must be some connexion between this state of the ovaria and menstruation, and mentioned the facts to Sir Astley Cooper.

On the 2d of July, 1832, Sir Astley sent me the ovary of a woman who died from cholera while menstruating. The ovary was much larger than natural, and at one point there was a small irregular aperture in its peritoneal coat, through which a portion of a slender coagulum of blood was suspended. On cutting into the substance of the ovary, it was found to be occupied with three small cysts or cavities, one of which was filled with a clear, ropy fluid, another with semi-fluid blood, and the third, which communicated with the opening in the peritoneal coat of the ovary, with a firm coagulum.

On the 18th of November, 1832, Dr. Girdwood and Mr. Webster removed the uterine organs from the body of a young woman who had died suddenly the preceding day when the catamenia were flowing. Both ovaria were remarkably large, and both Fallopian tubes were red and turgid. The peritoneal coat of the left ovary was perforated, at that extremity which was nearest to the uterus, by a circular opening, around which aperture, for several lines, the surface of the ovary was slightly elevated, and of a bright scarlet color; the margin of the opening was thin and smooth, and did not appear to have been produced by any external force. Its centre was slightly depressed below the level of the edges, but there was scarcely the appearance of a cavity beneath. The right ovary was much larger than the left, and when cut into, a cyst or cavity was seen filled with half-coagulated blood; the peritoneal coat of the ovary was entire. The uterus was large, and when cut into, appeared to contain an unusual quantity of blood. The inner membrane was of a bright-red color, and coated with a thin layer of catamenial fluid. Both Fallopian tubes were red and turgid, and the anterior of the left was filled with menstrual fluid.

On the 14th of January, 1837, a woman, thirty-seven years of age, who had long suffered from hysteria, died suddenly in St. George's hospital, during menstruation. No morbid appearance was found to account for her death. A small circular aperture was observed in the peritoneum of the left ovary.

This opening communicated with a cavity in the substance of the ovarium, which was surrounded with a soft yellow substance of an oval shape. In the preparation, you see the aperture in the peritoneal coat of the ovary, and the cavity with which it communicates. This aperture would probably not have been detected if the parts had not been covered with pure water when examined.

On the 31st of May, 1841, Mr. A. Shaw was present at the inspection of the body of a woman who died during menstruation in the Middlesex hospital. In the right ovarium, he says, the appearance was presented of one of the Graafian vesicles having been recently ruptured. A part of the surface, of the size of a fourpenny piece, was distinguished by a dark stain upon it; and here the peritoneal coat was slightly elevated, and the ragged edges toward the centre of the stained spot were of a particularly black color.

In Dr. Gendrin's "*Traité Philosophique de Médecine Pratique*" (1839), there is a description of the same state of the ovaria in five women who died during menstruation. In the first, the left ovarium was vascular, and in the middle was an aperture about a line in diameter, with an irregular margin. Its cavity would have contained a hemp-seed; its walls were red, and it was obviously a ruptured Graafian vesicle. In the second case, a small circular ragged opening led to a cavity two lines in diameter, the walls of which were of a bright-red color. In the fourth, the right ovary had an aperture a line and a half in diameter, leading to a small cavity, with vascular walls. M. Negrier has given an account of similar appearances in the ovaria during menstruation. A warm controversy has been carried on between M. Negrier and Dr. Gendrin on the priority of the discovery, and they appear to have been wholly unaware—which adds much to the importance of their observations—that an account of precisely the same appearances had not only been published by me, seven years before, in the second volume of the "*Cyclopædia of Practical Medicine*," but, fifty-eight years before, in the "*Philosophical Transactions*," by Mr. Cruikshank. "I also have in my possession the uterus and ovaria of a young woman," he observes, "who died with the menses upon her: the external membranes of the ovaria are burst at one place, whence I suspect an ovum escaped, descended through the tube to the uterus, and was washed off by the menstrual blood." There is no further observation made in this paper from which it can be inferred that Mr. Cruikshank supposed all the phenomena of menstruation to depend on this state of the ovaria. Even as early as 1672, it appears Kirkringius believed that ova were sometimes discharged from the ovaria during the monthly periods; for he says, "*Aliquando fœminæ dejiçiant hæc ova, imprimis tempore menstruorum.*" I have not had time to examine the work of Kirkringius, to ascertain whether he states this from an actual examination of the ovaria of women who died during menstruation, or if he adopted the opinion on purely hypothetical grounds, as Dr. Power did, and stated in his "*Essay on the Periodical Discharge of the Human Female.*"

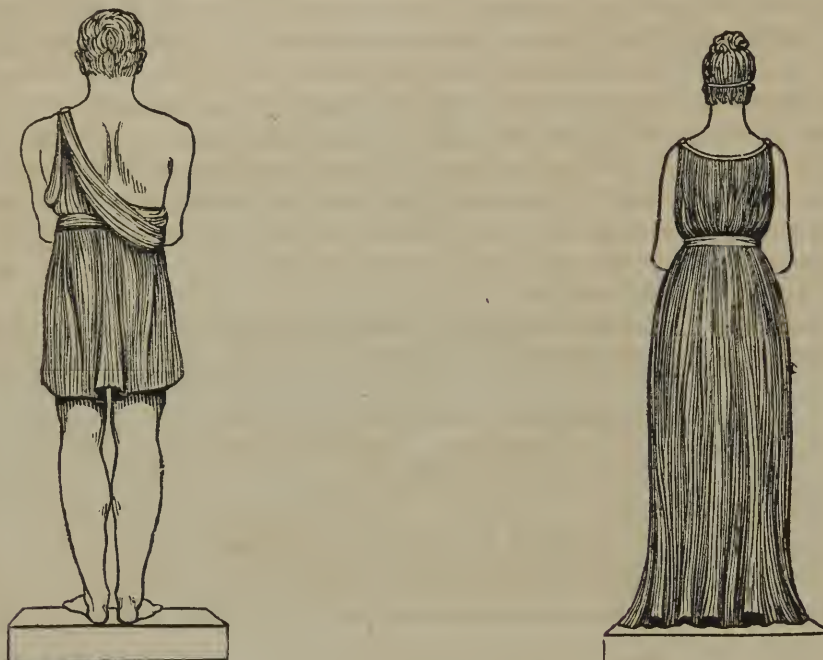
"It is thought by some," says Dewees, "to differ materially from common blood, from its not possessing fibrin. Of this I can not speak with certainty; but I am disposed to believe that this part of the blood has only undergone a change during elaboration—more especially, as the coagulating lymph is always found to accompany the red globules, whenever blood has been accidentally extravasated, or designedly drawn. My reasons for thinking that the fibrin of the blood has only suffered an alteration of property, and that it is constantly present in the menstuous blood, but is altered, are, that, in many instances, nothing more is necessary to this effect than the establishment of some peculiar arterial action: thus, we find, in certain kinds of small-pox, fevers termed putrid, scurvy, &c., the blood loses the power of coagulation; in the blood of those who die from lightning, blows upon the stomach, &c., it is said that the coagulating lymph loses the capacity to coagulate: therefore, the mere absence of coagulability is not sufficient to prove the absence of fibrin.

"In this, Nature has shown her beneficence; for to what wretchedness would the woman be doomed at each menstrual period, did it retain its property of coagulation! Mr. Hunter thought that the property of coagulation was lost from the blood losing its living principle during the secretion; but to this we can not subscribe—as this fluid, as has already been noticed, is thought to resist putrefaction longer than common blood."

SECTION IV.

DIFFERENCE BETWEEN THE SEXES.

THE accompanying representations exhibit the difference in the external forms of the male and female sexes :—



There is a striking difference between the sexes, whether we regard them physically, intellectually, or morally :—

1. **PHYSICALLY.**—It is very obvious to all that there is a great difference in the physical organization of the male and female, *independently of the sexual organs*. There is a striking difference in the *osseous* system. The male skeleton is larger, and is more coarse and rough, than that of the female ; and it is as easy for an anatomist to distinguish a male from a female skeleton among a number, as it is to distinguish male from female during life. There are also peculiarities of structure, by which the male may be easily distinguished from the female—such as the deficiency in the female of the *thyroid cartilage* or “*Adam’s apple*,” as it is called ; that is, the prominence in the neck of the male, by which a person may, by passing their hand over the throat, distinguish the sexes blindfolded or in the dark.

They may be easily distinguished also by the beard. There is a great difference also in the voice : the female voice is more shrill and sonorous. The organ of language in the female is also more prominent than in the male—often making good the proverb, that “a woman’s tongue is never still !” There is a great contrast also between the mammary glands or breast of the sexes ; imparting to this portion of the female both beauty and utility. The pelvis of the female is much larger than that of the male, and somewhat different in shape, for the obvious purpose of allowing the result of reproduction, or the infant, to pass into the world.

The size and weight of the female is much less than that of the male ; her muscular powers are much less developed than are those of the male : all which clearly constitute her the *weaker vessel*, and *fit her for less laborious employment, and the duties of domestic life*.

2. INTELLECTUALLY.—The intellectual powers of the female are, as a general rule, less than those of the male. She is not as capable as the male of performing the solution of a deep mathematical problem, or of accomplishing those great and important operations of mind which require extraordinary mental energy; but she is infinitely his superior in *devising and carrying out an intrigue of any kind*. On all subjects, her perceptive faculties, and sensibilities, are greater than those of men.

Her nervous organization is much more acute and more finely balanced than the male; all of which develop in the female a train of deeper emotions or passions: hence, when these emotions are carried to excess, she is easily thrown into violent excitement, *hysteria*, and a long train of nervous affections.

3. MORALLY.—As a general rule, women possess a much greater proportion of *good moral traits of character* than the male sex. Their sympathies being greater, they exercise more benevolence; their patience and perseverance are more remarkable. This we may daily see exemplified, in their fidelity at the bedside of a sick husband, child, or friend. As a modern writer observes—"Woman is inferior to man in her reasoning powers and corporeal strength: but she possesses more sensibility of body and mind; more tenderness, affection, and compassion; more of all that is endearing, and capable of soothing human woes. But she possesses less firmness of character, except, indeed, where strong affection exists: then nothing is too long, too irksome, too painful, or too perilous, for a mother, wife, or mistress, to endure or attempt, for the object of her love."

These interesting traits in the character of woman are happily illustrated in the beautiful lines of the celebrated traveller, Ledyard, as follows:—

"Through many a land and clime a ranger,
With toilsome steps I have held my way;
A lonely, unprotected stranger,
To all the stranger's ills a prey!

"While steering thus my course precarious,
It has been my fortune to ever find
Men's ways and dispositions various,
But gentle woman's ever kind:

"Alive to every tender feeling,
To deeds of mercy always prone—
The selfsame, endearing creature,
From sultry India to the pole."

SECTION V.

C O P U L A T I O N .

COPULATION is the conjunction of both the sexes. It is supposed to be the pinnacle of their natural felicity. It is the superlative degree of their earthly happiness, beyond which they can not aspire in human society. It is also the utmost height of their desires, and the greatest extent of their languishing wishes. It is at once the abatement, as well as the completion, of their previously-unbounded passions.

PART PERFORMED BY THE MALE.—In the union of the sexes in the process of reproduction, the part performed by the male is the introduction of the penis, by which the sperm or seminal fluid is conveyed to the uterus. In the flaccid state of the organ, this penetration is impracticable. It is first necessary that, under the excitement of the venereal desire, the organ should attain a suitable state of rigidity, which is called erection. In this state, the organ becomes very much enlarged, and raised toward the abdomen; its arteries beat forcibly, the veins become tumid, the skin of the glands more colored, and the heat augmented; it becomes also of a triangular shape: and these changes are accompanied

with a feeling of pleasure, but far less than is generally anticipated. This erection is caused by an increased flow and congestion of blood, which may be stimulated by contact with the female, or any other friction, or by the influence of the imagination alone.

The arteries first respond to the appeal; the organ is at the same time raised by the appropriate muscles, and its tissue becomes distended; the plexus of veins become turgid, and the return of blood impeded. In this way, the organ acquires the rigidity necessary for penetrating the parts of the female. The friction which then occurs keeps up the voluptuous excitement and the state of erection. This excitement is extended to the whole generative system. The secretion of the testicles is augmented; the sperm arrives in greater quantity in the vesiculæ seminales. The testicles are drawn up toward the abdominal rings by the contraction of the dartos and cremaster muscle, so that the vas deferens is rendered shorter; and (in the opinion of some) the sperm, filling the excretory ducts of the testicles, is in this manner forced mechanically forward toward the vesicles. When these have attained a certain degree of distention, they contract suddenly and powerfully, and the sperm is projected through the ejaculatory ducts and the urethra in jets. At this period the sexual pleasure is at its height.

The quantity of sperm discharged varies considerably; its average is estimated at about two drachms. The true sperm is diluted with the secretions of the prostate glands and the glands of Cowper. When the emission is accomplished, the penis gradually returns to its ordinary state of flaccidity; and it is generally unable to repeat the effort without some interval of repose. In some persons, however, the excitability is so great, and the secretion of sperm so ready, that little or no interval is required between the first and second attempts.

PART PERFORMED BY THE FEMALE.—During copulation, when both sexes burn with that animal instinct which is superior to all others in universality and violence, the clitoris of the female is in a state of erection, like the penis of the male; and so also is the spongy and erectile tissue of the nymphæ and of the vagina. It is in these parts particularly that the female experiences pleasure during sexual intercourse; and this feeling continues during the time of coition, as in the male, and is attended by a similar convulsive excitement, and a sudden discharge from the vulva and mucous follicles. After the excitement, both are thrown into a state of languor and debility; and when too often repeated, brings on various diseases.

SECTION VI.

CONCEPTION.

DIFFERENT THEORIES OF IMPREGNATION.—Having thus stated the provisions which have been made by nature for the concurrent offices of the two sexes, we may here examine various speculations and opinions which, from time to time, have been entertained relative to the nature of this marvellous and mysterious process—speculations which, although for the most part exceedingly hypothetical, and often completely visionary, have been dignified with the appellation of *theories of generation*. This it is our intention to do very briefly, and to notice only the more important of these theories: for the total number of hypotheses which have been advanced on this subject is so great, that their mere enumeration might occupy many pages. Drelincourt, who lived in the latter part of the seventeenth century, collected from the writings of his predecessors as many as two hundred and sixty-two “groundless hypotheses” concerning generation; and “nothing is more certain,” observes Blumenbach, “than that Drelincourt’s own theory formed the two hundred and sixty-third.”

These theories may be arranged according as they relate to the action of the parent organs, or to the changes in the egg occurring during the formation of the new animal; and Haller divided the first of these classes into three divisions, according as the offspring is supposed to proceed: first, exclusively from the

organs of the male parent, which is the theory of the *Spermatist* ; or, secondly, entirely from those of the female, which is that of the *Ovists* ; or, thirdly, from the union of the male and female products, which is the theory of *Syngensis*. The second class, again, may be arranged under two heads, according as the new animal is supposed, first, to have its parts rendered visible, by their being expanded, unfolded, or evolved from a previously-existing though imperceptible condition of the germ, which is the theory of *evolution* ; or, secondly, to be newly-formed from amorphous materials at the time when it makes its appearance in the ovum, which constitutes the theory of *Epigenesis*.

The theory of the *Spermatists* regarded the male semen as furnishing all the vital parts of the new animal, the female organs merely affording the offspring a fit receptacle and suitable materials for its nourishment, until it could exist by the independent exercise of its own functions. One of the earliest supporters of this hypothesis was Galen ; but its modern revival dates from the period of the discovery of the seminal animalcules, which were regarded by Leewenhoek as the proper rudiments of the fœtus. They were even considered by some to be miniature representations of men, and were styled *homunculi* ; one author going so far as to delineate in each the body, limbs, features, and all the parts, of the grown human body. Even Leewenhoek describes minutely the manner in which they gain the interior of the ovum, and are retained after their entrance by a valvular apparatus.

The *Ovists*, comprising some of the older philosophers, such as Pythagoras and Aristotle, maintained that the female parent affords all the materials necessary for the formation of the offspring, the office of the male being merely to awaken the dormant formative powers residing in the female products. Malpighi and Harvey asserted that the rudiments of the fœtus are derived principally from the female ovum ; an opinion which is also elaborately defended by Vallisneri.

The theory of *Syngensis*, or of the simultaneous combination of products derived from both sexes, which, after sexual intercourse, are supposed to unite together to form the germ, is also of very ancient date. In connexion with this theory may be mentioned that modification of it which may be termed the theory of *metamorphosis*, according to which a formative substance is held to exist, but is allowed to change its form, in order to be converted into the new being ; as also the hypothesis of Buffon, which was eagerly adopted by Needham, who conceived that certain molecules, which they termed *organic*, and which they believed universally to pervade plants and animals, were all endowed with productive powers, which enabled them, when placed in suitable situations, to attract one another, and to compose by their union living organized bodies. They imagined that, in the process of generation, the superabundant portion of these organic molecules were accumulated in the generative organs, and there constituted the rudiments of the offspring.

The hypothesis of *evolution*, or of pre-existing germs, coincides with that of the *Ovists*, in considering the fœtus as solely the production of the female ; but it further assumes that it already exists, with all its organs, in some part of the female system previous to the sexual intercourse ; and that it receives no proper addition from the male semen, the action of which is merely that of exciting the powers of the fœtus, and of endowing it with vitality. The observations of Haller with respect to the gradual enlargement or evolution of the chick during the process of incubation, were conceived to lend great support to the advocates of this theory, of whom the most strenuous and enthusiastic was Bonnet. This naturalist, so celebrated for the boldness of his speculations, contended, not only that the whole of the parts of the fœtus pre-exist in the ovum, before they actually make their appearance, but that the germs of all the animals which are in future to be born, also pre-exist in the female parent ; so that the ovaries of the first parents of any species of animal contained the germs of all their posterity, included the one within the other, like a nest of boxes : from which comparison he termed his theory that of "*emboîtement*." This extravagant notion was adopted by many physiologists, principally from its affording some kind of explanation of what no other theory seemed in the least adequate to solve. Spallanzani, in particular, was a zealous defender of the hypothesis of pre-existing germs. It appears, however, to be totally irreconcilable with the phenomena of hybrid productions, and of the resemblance which, in so many instances, the offspring bears to its male parent.

We have already mentioned that Harvey and Malpighi ascribed the formation of the *fœtus* principally to the powers of the female. This opinion gave origin to the modern theory of *Epigenesis*, first clearly promulgated by Caspar Frederick Wolff,* who not only described a successive production of organs, of the previous formation of which there existed no trace ; but showed also, that after parts are first formed, they undergo many important changes in their shape and structure, before arriving at their finished state. The more recent researches, aided by delicate microscopical observation, of Meckel, Pander, Baer, Rathké, Oken, Purkinje, and Valentin ; Serres, Rolando, Dutrochet, Prévost and Dumas, Coste, and others, have demonstrated that the theory of *Epigenesis*, or superformation of parts, is much more consistent with the observed phenomena than that of evolution. The facts which have thus been brought to light are of peculiar interest with reference to the plans of nature, into which they give us a more extended insight, by exhibiting new and unexpected affinities between remote families and classes of animals ; by showing that at one period the type of their formation is nearly the same, and by explaining the seeming caprice of nature in instances of monstrous and defective formation. But to attempt adducing the proofs and illustrations of these positions, would engage us into details requiring an extensive survey of the whole animal creation, to enter into which would occupy more space than is compatible with the limits of the present treatise.

The next class have advocated the theory of *absorption*. These maintain that the seminal fluid, after having been thrown into the vagina, is taken up by the absorbents, and thus carried into the circulation ; and is subsequently deposited in the ovaria, and there impregnates it. It is in this manner that they suppose the various *hereditary diseases are communicated to the fœtus*.

Having adverted to the various theories which have prevailed at different periods, I will now mention one which is advocated by the generality of physiologists of the present day. They now generally believe that the semen is injected into the vagina, passes through the uterus and the Fallopian tubes, and is then thrown on the ovaria by their fimbriated extremity : and thus the ovum is impregnated. They believe that in about one week after impregnation the fimbria seize the ovaria, and, as it were, force out the ovum or product of conception, and convey it along the tubes into the uterus, where it is nourished and perfected.

Most authors in the present day advocate this theory ; and, although it is somewhat plausible, the arguments in its favor are by no means conclusive. There is no certain evidence that the semen takes such a circuitous route ; and from the small size of the uterine aperture of the Fallopian tubes (so small as not to admit without dilatation a substance larger than a bristle), it is highly improbable, to say the least, that the semen passes through them.

Again, we would ask, what evidence is there that the Fallopian tube, which naturally hangs pendulous, performs the office of erection, in order to throw the semen on the ovaria ? Not only so, but, according to this theory, the female remains passive in the act of conception, and contributes nothing during the venereal orgasm to the formation of the embryo.

It is asserted, in favor of this theory, that there is every appearance after impregnation that an ovum has escaped from the ovaria, leaving a red excavated spot, called the *corpus lutium*, which is supposed to be the bed of the fecundated ovum. But this is refuted by the recently well-established fact that the same phenomenon is observed in virgins after menstruation, as well as others.

The most valid argument in favor of this doctrine is, that conception, either true or false, occasionally occurs in the ovaria, the Fallopian tubes, or the cavity of the abdomen ; arising, as is alleged, from nature having, from some cause, failed to carry the impregnated ovum to the cavity of the uterus. But, from all the investigations and observations we have been able to make, it appears to me that, generally at least, it is the female portion of the *fœtus* called the ovum only that has thus escaped, without ever having been impregnated ; and that, by a constant accumulation of new materials to the part, it has continued to grow, and thus formed a *mola* or a *superfœtation*.

* In his inaugural dissertation, entitled "*Theoria Generationis*," published at Berlin in 1759.

Since writing the above, I have found the following additional testimony in favor of this opinion from an experiment made and recorded in the "Medical and Physical Journal," vol. ix., p. 56. It appears evident, from this experiment, that an imperfectly-developed fœtus may be formed *without any intercourse with the male*. The following is the account:—

"If a female rabbit be shut up with the male, but so as that, although she can see, she can have no access to him, and kept in this situation until the heat is over, the frimbria have not only been found tinged with blood, of a dark-mulberry color, writhing in an extraordinary manner, having a strong peristaltic motion, and embracing with their fimbriated extremities the ovaria, but several ova have been seen enlarged, and actually burst from their cells; and in the ovaria of a young woman, who, from the circumstance of an *imperforate hymen and restraint*, there was the strongest reason to believe had had *no sexual commerce with men*, but was probably of a warm constitution, and had indulged in lascivious practices, *hair, teeth, bones, and other signs of imperfect conception, were discovered?*

"Experiments of Drs. Heighton and Cruikshank, on rabbits, also confirm the opinion of Blumenbach, that *under particular circumstances of lascivious feeling, something similar to impregnation, and escape of ovum, may take place without coition, or in a state of virginity*. It therefore appears evident, from numerous experiments, that there is a periodical discharge of ova, eggs, or seminal secretion, from the female, as from the male testicles, by which name the ovaria were formerly known. This elementary principle, by whatever name it may be called, is discharged from the exterior or surface of the ovaria, prepared or in a fit state for impregnation, during the whole time that she is in a condition to conceive. The same phenomenon takes place in animals in a state of heat."

A case, however, is related by a Dr. Heine, in Germany, in which he says he extracted a living child from the abdomen.

But supposing this to be true, is it not, I ask, as rational to believe that the embryo *might have passed from the uterus, through the Fallopian tubes, to the cavity of the abdomen, immediately after conception*, as it is to believe that the embryo is *always carried* after conception by the Fallopian tubes *into the uterus*? Indeed, have we any well-authenticated case of a well-formed living fœtus ever having been found anywhere but in the cavity of the uterus?

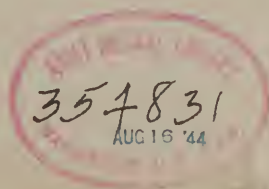
Have not all cases of tubal, abdominal, and ovarian conception, been imperfect? Have they not all been a diseased or a partially-developed ovum?

This theory, therefore, to say the least of it, savors of great improbability. According to it, the Fallopian tubes must perform, not only a double action, but *two directly opposite actions*: first, of propelling the semen to the ovaria; and, second, of propelling in a contrary direction the ovum to the uterus.

OUR OWN THEORY.—We have now given the principal theories of the doctrine of conception that have been, or now are, advocated by the most distinguished physiologists. It now only remains for us to give our own; and *this we have deduced from well-known and acknowledged anatomical and physiological facts, demonstrated by experiments, both upon the human subject and upon the lower animals*. Here we may remind our readers that we have before *shown that Nature has made abundant provision, throughout all her varieties of animated beings, both for the male and female, to contribute to the formation and removal of their offspring*. And I maintain, as an incontrovertible fact, that each sex furnishes about an equal share of the materials which produce the physical, intellectual, and moral qualities, entering into the formation of the fœtus:—

1. PHYSICAL MATERIALS.—No fact is more clearly demonstrated than that, in the union of the sexes, during the sexual congress, the female *ejects a fluid substance from her system* as really as the male. The same heightened feelings and the same convulsive motions attend the ejaculation, and the sensations experienced are precisely similar in one sex as in the other.

That each parent contributes an equal amount of material toward the physical organization of the infant, we have the most positive and unequivocal evidence, in the *product of conception itself*. This is more clearly seen (though not more real) when the parents are a Caucasian or white and an African: the offspring is *unlike either parent*, but possesses a portion of the physical traits of each.



The color is midway between the two, constituting what we term a *mulatto*; thus showing a most perfect and most extraordinary combination of original elementary principles, perfectly and harmoniously blended: whereas, did the father alone contribute to the production of the offspring, the color and other physical traits would resemble him.

2. **INTELLECTUALLY.**—It must be perfectly obvious to all that children resemble their parents in their intellectual peculiarities; sometimes resembling one more than the other, but the mother as often as the father; and that sometimes these intellectual traits are very happily blended.

3. **MORALLY.**—That the child usually resembles either the mother or the father in disposition, is so strikingly manifest, as to become proverbial. And not unfrequently do we see the peculiar disposition of each intimately blended; all which shows conclusively that each sex generally contributes equally in every respect to the formation of the offspring; and that in the act of sexual intercourse, the elementary principles, physical, mental, and moral, must be secreted on the part of the female as well as the male. And probably the reason why certain traits of one parent predominate more than another is, that the parent which the child most favors has contributed most of that part of the materials for its formation.

SIMILARITY OF THE GENERATIVE ORGANS OF BOTH SEXES.—The great similarity between the male and female organs of generation is remarkable, although to superficial observation they appear so different. So much is this the case, that it has been said by some writers on this subject, that a *man turned outside in*, is a *female*; and that a *woman turned inside out*, is a *male*. On the subject of the similarity of the male and female organs of generation, Dr. Ramsbotham has the following remarks:—

“Although the organs of generation appear to be so widely different in the two sexes, and indeed give them their distinctive character; yet there is seen, on closely comparing them, a great similarity, not only in function, but even in formation: so that we can not withhold our belief that they have both been fashioned on a common model. The resemblance between the *ovaria* and *testes* in office, form, organic elements, and original situation, is most striking. The testes lie in the abdomen until about seven months of foetal life is past. And both the testes and ovaria are supplied with blood-vessels arising from the same source (namely, the spermatic), and following the same track. The uterus has been likened to the prostate gland of the male, and it certainly bears a great similitude in its position, at least during foetal life. The vasa deferentia and Fallopian tubes resemble each other in function and construction.

“The clitoris may be likened to the penis, and the labia to the scrotum. In many instances, the confusion arising from this similitude is so remarkable, that it is difficult to decide, during foetal life, to which sex the individual belongs. It must be observed, indeed, that the earlier the time chosen for making the comparison, the stronger will the resemblance be. The clitoris of a foetus of three months is as large as the penis of a male of the same age; and at a more recent period of intra-uterine existence, the distinction of the sex is by no means perceptible.”

To the presence of these little glands, the ovaria (which are removed in some animals by castration, to prevent conception), the female is as much indebted for the distinctive physical marks and moral attributes of her sex as the male is to the possession of the testicles.

When we reflect how wonderful the function of reproduction appears to our finite intelligence, and how attractive it is to the inquiring mind, we can scarcely be surprised at the numerous theories which have sprung up respecting it: each to be displaced by another, more plausible than the preceding; for every philosopher, anatomist, and physiologist, of any celebrity, has directed his attention more or less to the study of generation or reproduction. Many of these theories, however, are without a fact to support them, and have no better foundation than the imagination or reasoning of their author; and they would scarcely claim our attention, were it not that we find them attached to some name of note, or from their being curious matter of history. Thus Hippocrates, Pythagoras, and many of the older philosophers, together with Descartes, Buffon, and others, in later years, imagined that, during copulation, the female emitted a *fecundating fluid*; but this idea was opposed by Zeno and the stoic school, and, in more modern times, by Fallopius. Hippocrates, Aristotle, and others, believed that the seed of the male and female were mingled, and that according to whichever of these was most powerful, a foetus of that sex was pro-

duced. Descartes and his followers imagined that when the seminal fluids were mingled, *a fermentation took place*, and a fœtus was formed. Again, it was asserted that the seed of the male was *acid*, and that of the female *alkaline*, and an *effervescence ensued*; or that, like two chymical agents, they reacted — a *double decomposition* took place, and a fœtus was precipitated! Another set of philosophers, again, thought that the *parts of the fœtus were distributed* (already existing perfectly formed) in the seed of the male and female, part of them in each, and that by the act of copulation they united themselves. The stoics thought that the fœtus was the produce of the *male seed alone*, and that the female merely served as the *soil*, supplying the nutriment necessary to bring it to perfection.

Buffon considered the fœtus to be a combination of atoms, from *each individual part of the male and of the female*. If this were so, it might have led to some very curious malformations resulting from maimed parents. Nor must I omit the doctrine of Dr. Leewenhoek, derived from his knowledge of the spermatic animalcules — that man was at first a *worm*; that he passed through *several transmigrations* in the womb, and that his formation was gradually unfolded, as the *butterfly is developed from the caterpillar*.

It does not appear to me that any of the above theories require any further remarks than have been given.

The whole, then, which we desire to say on the subject of conception, may be resolved into the two following principal points or doctrines, which indeed very nearly resemble each other in the most essential particulars:—

HOW CONCEPTION TAKES PLACE.—1. That conception takes place in the human female in the same manner as it does in all the females of the mammalia order of animals, which is the very same or similar to the manner in which it takes place in the fowl.

A large number of small globular bodies, called ovum or eggs, are formed, and are successively developed, from their smallest and almost imperceptible size to the full-grown egg (which we have more fully illustrated in the chapter on animal life). These eggs pass at maturity into a tube, called the ova duct, and are afterward expelled. Now these eggs may be both formed and expelled without the influence of the male, and frequently are so. But every one in the habit of raising poultry knows that such eggs will never produce chickens; but that if the eggs be so fecundated — that is, if they contain the “tread,” or as it is technically called, the *punctæ vitæ* — and are exposed to a certain heat for a suitable period, either under the hen, or artificially, a new being is the result.

One view of our doctrine of conception then is, that human conception is analogous to this process; *that all the human species are born from an egg*; and that this takes place in the following manner:—

We have already stated that the ovaria of the human female are rounded glandular bodies, situated near the fundus of the womb, and containing a great number of vesicles or eggs, similar to those of the fowl. It was formerly supposed that there were only fifteen or twenty of these vesicles in the ovaria, called by physiologists “Graafian vesicles;” and that every time the woman was impregnated, one of these was used up: so that she could by no possibility have more children than there were Graafian vesicles. But now it is ascertained that these vesicles are innumerable; indeed, that *the substance of the ovaria is composed of them*. Although they are very minute in size at first, yet they are continually and gradually enlarging, until they attain that of the ripe external vesicle.

These vesicles, or rather drops of albuminous yellow serum, coagulate, like the white of eggs, if the recent ones be plunged into boiling water.

At every time the woman menstruates, or the animal is in heat, or perhaps, if a vesicle be ripe, every time sexual intercourse takes place, *one of these vesicles bursts*, and the ovum which it contains is taken up by the Fallopian tubes or oviduct, and carried toward the uterus and the external world. If it meet with any of the seminal fluid of the male in its progress through the uterus, *it becomes impregnated*; if not, it passes off through the vagina. The time occupied in its passage is supposed to be from five to ten days. That the ovaria do part with an ovum at the menstrual period, we may refer the reader to the very conclusive anatomical investigations which took place on a number of females who died suddenly during menstruation, which we mentioned under the article “Menstruation.” And all the above facts

also have been observed, by direct experiment, to take place in the lower animals of the mammalia order : thus making the similitude between the manner of impregnation in the *human female* and in the mammalia order of the animal kingdom strikingly resemble that which takes place in the fowl.

2. The next view which we take of this subject, and which is nearly allied to the last, is, the doctrine of the union of the male and female seminal fluid, in the following manner : That the semen on the part of the female, secreted by the ovaria (which corresponds to the male testicles), and which is contained in the ripened vesicle, is, in the act of copulation, seized by the fimbriated end of the Fallopian tubes (which correspond to the vas deferens of the male), and then passes through these tubes to the womb ; and is thus brought in contact with the semen of the male, and impregnated, and constitutes the embryo or germ of the new being.

In favor of this latter view, Dr. Blumenbach, a celebrated European physiologist, has some very pertinent remarks. He says : “ When a woman admits the embraces of a man, and both burn with that animal instinct which is so superior to all others in universality and violence, the uterus, I conceive, swelling with a kind of inflammatory orgasm, and animated by its *vita propria*, draws in, as it were, the semen ejaculated by the male, and pours forth a fluid of its own against it, which is supplied as follows : During the act of coition, the tubes become rigid, and their fimbria embrace the ovaria, in one (or both, in case of twins) of which a ripe Graafian vesicle is contained ; and, by their pressure, it bursts like an abscess, and is jetted through the uterus and vagina ; and the ovum or *albuminous drop*, as it is called, is retained in the womb, and *impregnated by the male semen*.”

After impregnation has taken place, the lips of the seam become closed by an external cicatrix, leaving in the ovary a corpus luteum.

“ Such an albuminous drop,” says Blumenbach, “ appears to be *what the female contributes* in the process of conception. And it is probable that during the adult state these drops become mature in succession, so that, one by one, they burst the covering of the ovarium, and are received by the abdominal end of the Fallopian tube, and conveyed into the uterus, where they come in contact with the seminal fluid, and thus become impregnated.”

In conclusion, we believe the evidence decisively preponderates in favor of our theory, viz., *that the seminal fluid, during coition, is thrown from the seminal vesicle and urethra of the male, through the vagina into the uterus of the female ; while the seminal fluid of the female is thrown from the ovaria, through the Fallopian tubes, the ovum of which, coming in contact with the male semen, becomes impregnated, and forms the embryo or the fœtus.*

At any rate, this, or the preceding doctrine, which is so nearly allied to it, is at once the most rational and philosophical, and accords with all the physiological facts resulting from the experiments of the greatest anatomists and physiologists of all ages.

SECTION VII.

THE PROGRESSIVE DEVELOPMENT OF THE OVUM.

EMBRYO.—There is, perhaps, no department of physiology which has been so remarkably enriched by recent discoveries, as that which relates to the primitive development of the ovum and its embryo. The researches of Baer, Rathké, Purkinje, Valentin, &c., in Germany ; of Dutrochet, Prévost, Dumas, and Coste, &c., in France ; and of Owen, Sharpey, Allen Thomson, Jones, and Martin Barry, in England, but more especially those of the celebrated Baer, have greatly advanced our knowledge of these subjects, and led us deeply into those mysterious processes of Nature which relate to our first origin and formation.

These researches have all tended to establish one great law, connected with the early development of the human embryo and that of other mammiferous animals, viz., that it at first possesses a structure and arrangement analogous to that of animals in a much lower scale of formation; this observation also applies, of course, to the ovum itself, since a variety of changes take place in it after impregnation, before a trace of the embryo can be detected.

At the earliest periods, the human ovum bears a perfect analogy to the eggs of fishes, amphibia, and birds; and it is only by carefully examining the changes produced by impregnation in the ova of these lower classes of animals, that we have been enabled to discover them in the mammalia and human subject.

As the bird's egg, from its size, best affords us the means of investigating these changes, and as in all essential respects they are the same in the human ovum, it has been necessary for us to lay before our readers a short account of its structure and contents, and also of the changes which it undergoes after impregnation.

The ovum at first exists in the state of a small membranous egg, filled with a transparent fluid, which, if put in hot water, will coagulate; in the centre of which is the embryo, like the *tread or punctæ vitæ* of the egg of the fowl.

At this period, its parietes or sides are composed solely of two delicate membranes: the outer one is called the *chorion*, the inner one is called the *amnion*.

DECIDUARY.—As soon as conception has taken place, a new action also takes place in the uterus. It secretes a semi-fluid opaque membrane, which lines the whole cavity of the uterus, except where the ovum is situated: there it passes over it. It is called the deciduary membrane. It consists of two layers: that which is next to the uterus is flocculent, and that which is next the ovum is smooth and plain. It is highly vascular, and is supplied with blood from the uterine vessels. In the early periods of pregnancy, the two layers are separated from each other, especially toward the fundus uteri, by a quantity of red-colored fluid, partly serous and partly half-coagulated; it is a kind of serous-albuminous fluid.

As gestation advances, this fluid is gradually absorbed, and the two laminæ come in close contact at every point, except where the placenta intervenes between them. For this membrane splits at the edge of the placenta, and one layer passes between it and the uterus, and the other covers the fetal face of it. The use of this membrane appears to be the nutrition and preservation of the vitality of the embryo, before the elaboration of the placenta.

When the ovum is first seen, it is completely surrounded by minute, filamentous, mossy vessels, as with an efflorescence, which proceed from the chorion, and imbed themselves in the semi-fluid deciduary membrane, secreted by the uterus. These filamentous vessels are called the *shaggy chorion*. As the ovum continues to grow, the chorion and the amnion increase in extent; but the flocculent vessels do not increase in the same proportion. They now no longer surround it at all points, and at length occupy only, as it were, one corner, where they become clustered together, and then form what is called the *placenta* or *after-birth*; while the increased growth of the chorion and amnion envelops the greater part of the ovum.

THE CHORION is a thin, glistening, transparent membrane, very much resembling the serous tissues, very tough enveloping, and affording an external covering to the whole of the ovum, with the exception of the placenta, which is interposed between it and the uterus. It passes over the fetal face of the placenta, and gives a coat to that surface, and also gives a coat to the umbilical cord. It possesses no blood-vessels to the naked eye; but we can not deny its vascularity, because it is subject to disease: and in many of the mammalia it can be readily injected. It is designed, in conjunction with the amnion, both for the protection of the embryo, and of assisting to form a bag of waters called the *liquor amnii*—which, forming a soft wedge, dilate the structures during labor, with the least possible chance of injury.

THE AMNION.—This is another thin, transparent, tough membrane, resembling the chorion in appearance, to which it adheres, taking generally a very nice dissection to separate them; though sometimes the gelatinous substance by which they are united is found in a tolerably thick stratum. Its use is the same

as that of the chorion, so far as affording a covering to the ovum is concerned ; but it also performs an additional, distinct function, viz. : it secretes the *liquor amnii*.

LIQUOR AMNII.—This is a fluid enclosed by the above membranes, in which the fœtus floats. It varies very much, both in quantity and in quality, in different pregnancies. Its quantity may vary from a few ounces to a gallon or more. The quality may vary, from a perfectly pellucid and inodorous fluid, to one which is thick, viscid, and dirty, resembling a strong infusion of coffee, and of a putrid odor. Its usual appearance is that of a rather dingy water, of a greenish or yellowish cast. Its relative proportion with the size of the fœtus is greatest in the early stages of pregnancy. Its use has been much disputed by physiologists, some supposing that it was intended to nourish the fœtus ; but we have no need of it for that purpose, because we have a regular system of vessels communicating with the mother : and, besides, it contains little or no nutritious properties.

Its real use appears to be, to defend the young embryo from pressure, blows, and injuries, and to protect the funis and placenta during the later months of pregnancy from a degree of compression which would impede the regular flow of blood through them to and from the fœtus, and to allow free motion to its limbs ; and also, water being a bad conductor of heat, it serves to keep up an equable temperature in the fœtus, to whatever vicissitudes of temperature the mother may be subject.

SECTION VIII.

THE PROGRESSIVE DEVELOPMENT OF THE EMBRYO.

ACCORDING to Prévost, Baer, and Dumas, the blood is formed independently of the heart. The arteries, veins, and heart, are formed successively. The development of the nervous system commences from the circumference of the embryo, proceeding toward the centre ; hence the lateral nerves of the head, trunk, and pelvis, are developed, while the cerebro-spinal system is yet in a liquid state.

Of the digestive organs, the intestinal canal is the first to appear : it consists, during the first days of its formation, of a curved open tube, extending the whole length of the embryo, placed before the vertebral column. It communicates with the vesicula umbilicalis. It extends and expands, and its superior extremity, the mouth, opens about the fourth or fifth week ; the inferior extremity, the anus, opens about the seventh : the outlines of the stomach are visible about the ninth week. Before the seventh day we can not perceive anything in the uterus which indicates the presence of a new being. On the tenth day a semi-transparent, grayish flake may be perceived, of an indeterminate form. From the twelfth to the thirteenth day, the presence of a vesicle, the size of a pea, containing a thick fluid, in the middle of which swims an opaque spot, presents the first lineaments of the new being that bears the name of *embryo* : it is enveloped by the membranes *chorion* and *amnion* ; the weight is equal to one grain.

The embryo may be perceived with the naked eye at the fourteenth day after conception. On the twenty-first day, it resembles, in form, a large ant or lettuce-seed ; its length is from four to five lines, and weight from three to four grains : at this period the different parts of the fœtus present a little more consistence, and those which are to form bones pass into a cartilaginous state. On the thirtieth day it is about the size of a horse-fly, and resembles a worm bent together. At this period we may perceive, although faintly, some traits of the principal organs : the head appears as large as the rest of the body ; there are also, in the former, black dots marking the spots for the eyes ; its weight is from nine to ten grains, and its length from ten to twelve lines. At the period of forty-five days, the development of the fœtus in various parts becomes well determined : the superior and inferior extremities appear under the form of globular tubercles, the former preceding the latter by a short period of time ; the body lengthens, but keeps the ovoid figure ; blackish spots indicate the presence of the eyes, the mouth, and the nose ; weight one drachm, length one inch. At from sixty to seventy days, the various parts of the fœtus

become progressively developed: the black spots which represent the eyes enlarge, the eyelids are visible, the nose becomes a little prominent, the mouth enlarges, the external concha of the ear becomes distinctly delineated, the brain is soft and pulpy, the neck is defined, and the heart is fully developed. At ninety days (three months), the development of all the essential parts of the fœtus becomes perfectly defined: the eyelids are distinctly delineated, but closely shut; the lips are very distinct and drawn together; the organs of generation are exceedingly prominent in the male as well as in the female—the penis in the former and the clitoris in the latter are remarkably elongated. The heart beats with force, and the larger vessels carry red blood; the fingers and toes are defined; the muscular system begins to characterize itself: weight, about two ounces and a half; length, from four to five inches.

At one hundred and twenty days, or four months, the development of the fœtus in all its parts is remarkably increased: the brain and spinal marrow acquire more consistence; the muscular system is distinct; and here and there we meet with some cellular tissue. The abdomen is fully covered in, and the intestines are no longer visible; in the latter a little meconium collects: weight, seven to eight ounces.

At one hundred and fifty days, or five months, the development of every part of the fœtus is very considerably increased: the lungs enlarge, and are susceptible of experiencing a certain dilatation. The cutaneous envelope acquires at this period much consistence, the epidermis is stronger and thicker, the situation of the nails is determined, and the meconium is more abundant, and lower in the intestines: length, eight or ten inches; weight, fourteen or sixteen ounces; intellectual faculties void.

At one hundred and eighty days (six months), the fœtus is increased in its shape and formation: the nails are marked; a little down appears on the head, the first indication of hair; the cellular tissue is abundant, and a little adipose substance is deposited in its cells: length, from nine to ten or twelve inches; weight, from one and a half to two pounds; intellectual functions void.

At two hundred and ten days (seven months), every part of the fœtus has progressively increased in volume, size, and weight: the nails are formed, the hair appears, the testicles descend, the meconium increases in the large intestines, and the bony system is nearly complete: length, from twelve to fourteen inches; weight, two and a half to three pounds; intellectual functions void.

From the seventh to the ninth month, the successive development of the fœtus is limited to mere weight and size. At the period of nine months, the cutaneous, arterial, and capillary systems become very active, the skin appears colored, and the perspiration is established. The intellectual functions void; but the animal functions are well developed, especially that of taste. The child is sensible of pain, of hunger, and of heat and cold: weight, from five to eight pounds; length, from eighteen to twenty-two inches.

The following additional remarks on the progressive development of the fœtus are extracted from Dr. Severn, of London:—

“Impregnation having taken place, and the ovum conveyed to the interior of the uterus, its presence may be demonstrated as early as the eighth day, when a mucilaginous semi-transparent drop will be found adherent to the interior of the uterus, generally toward its fundus.

“At the twelfth or thirteenth day, it is increased in size, and forms a vesicle filled with a turbid, flocculent fluid, in the centre of which will be seen a dark spot, the *punctum saliens*, or heart of the fœtus.

“At the twenty-first day, the embryo is increased to the size of a large ant.

“At the thirtieth day, it resembles in size and figure a maggot, curled up. At this time, the budding projections of the limbs are visible, but their shape is not defined.

“At six weeks, the size of the fœtus is about that of a bee; the clavicles, scapulæ, and other bones, are traceable; the limbs are not yet formed, but are still rounded prominences, not having acquired their relative length, or definite shape. The nose, the eyes, and the mouth, are distinctly visible, and the head is larger than the rest of the body.

“At two months, the various parts are so much developed, that we can sometimes decide on the sex; the features are enlarged; the heart and the course of the larger vessels can be traced.

“At three months, the fœtus is still further developed: its length is three inches, and the genital

organs are sufficiently formed to enable us to distinguish its sex. The liver is large in proportion to the other abdominal viscera, the lungs small, the bones of the extremities are forming, as well as those of the head and spine.

“At four months, the parts are all progressively increased, and the length of the fœtus is rather more than five inches; a small quantity of meconium is found within the intestines, and the movements of the fœtus are felt by the mother, although very feebly and indistinctly.

“At five months, its length is from six to seven inches, the nails are beginning to be formed, the muscles are traceable, and the mother perceives that its movements are growing gradually stronger.

“At six months, it is from eight to nine inches in length, meconium is found throughout the whole of the intestinal canal; and if an abortion take place, the child is sometimes born alive, but seldom breathes more than a few minutes.

“At seven months, it is between eleven and twelve inches long; and if now expelled, it is called a premature birth, and the child is capable of being reared.

“At eight months, it measures from fourteen to fifteen inches.

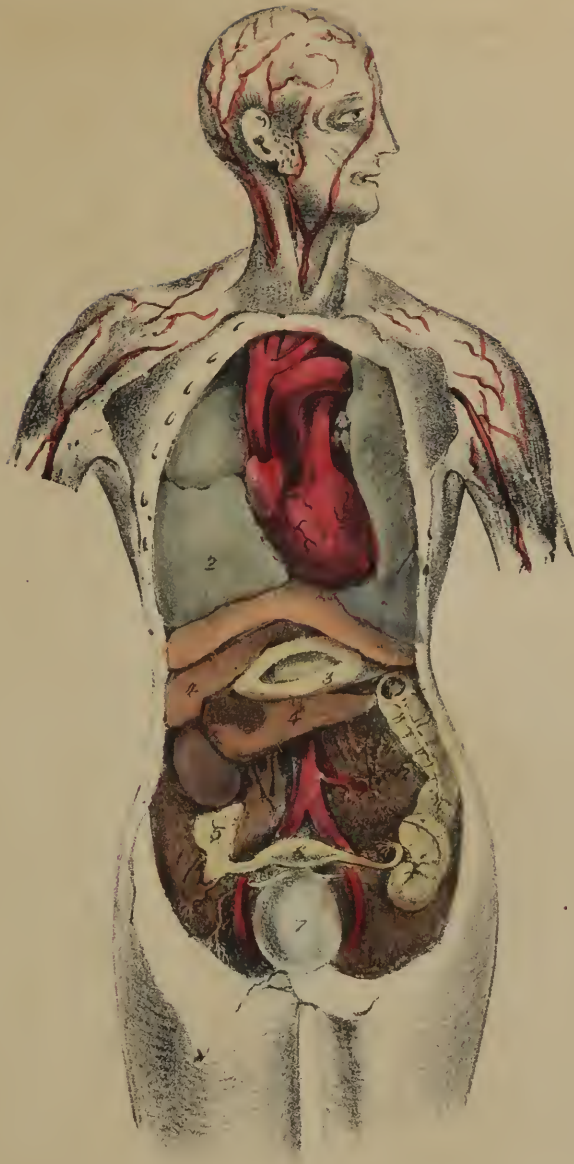
“At nine months, it is from eighteen to twenty-two or twenty-three inches in length.” See n. p. 88.

SECTION IX.

THE UMBILICAL CORD, OR NAVEL-STRING.

THE umbilical cord is an essential part of the ovum, connecting the fœtus to its placenta. It is found in oviparous and viviparous animals, and also in plants; but in these different classes it appears with many modifications. In the human subject, it consists of three vessels; of which two are arteries, and one is a vein. On the eighth day, we find this to be a flattened vascular bag, containing fluid, spreading over the amnion and yolk, all the way to the junction of the yolk and albumen. The vascular membrane of the yolk extends no further over it than to that junction. On separating the yolk-bag from its adhesion to the albumen, we see, on that part of the bag, a broad circle, as if there had been a deficiency, closed by the albumen. By the tenth day, the vascular production is no longer a bag, but the fluid is gone, and the sides coming in contact, we find two layers of membrane. There is, however, a difference in this respect, in point of date, for sometimes the fluid is gone much earlier. The double membrane gradually extends more and more over the albumen, and completely encloses it and the yolk about the fourteenth day. Just before this, a small deficiency exists, through which the albumen could escape. In proportion as the albumen is absorbed, its connexion with the yolk becomes narrower, and, in the same degree, the vascular areolar membrane extends. About the fifteenth day, the connexion is by a very narrow neck, and the whole vitelline membrane is vascular to that neck, which is still more contracted. These are imbedded in gluten, and covered with a double membranous coat. The two arteries are continuations of the *arteriæ hypogastricæ* of the child, which, passing out at the navel, run in distinct and unconnected trunks until they reach the placenta, where they ramify and dip down into its substance. When they reach the placenta, the one artery, in some cases, sends across a branch, to communicate with the other. The vein commences in the substance of the placenta, forms numerous rays on its surface, corresponding to the branches of the arteries; and, near the spot where the arteries begin to give off branches, these rays unite into a single trunk, the area of which is rather more than that of the two arteries. None of these vessels are furnished with valves.

The umbilical vessels run in a spiral direction, within the covering of the cord, and the twist is generally from right to left. Besides this twisting, we also find that the vessels, especially the arteries, form very frequent coils, loosely lodged in the gluten.





The cord does not consist entirely of vessels, but partly of a tenacious transparent gluten, which is contained in a cellular structure ; and these numerous cells, together with the vessels, are covered with a sheath, formed by the reflection of both chorion and amnion from the placenta ; and, of necessity, the amnion forms the outer coat of the cord. The chorion adheres firmly to the cord everywhere, but the amnion does not adhere to the chorion ; it is not even in contact with it at the placental extremity, but forms there a slight expansion, which, from its shape, has been called by Albinus the *processus infundibuliformis*.

The proportion of gluten is larger in the early than in the advanced stage of gestation, and the vessels at first run through it in straight lines. In some instances the cells distend or augment in number, so as to form tumors on the cord, which hang from it like a dog's ear.

There is a small sac, or bladder, found on the placenta, at or near the extremity of the cord, in the early part of gestation. It is most distinct between the third and fourth months of pregnancy, and is placed exterior to the amnion. It is filled, though not quite distended, with a whitish fluid, on which account it is called the *vesicula alba*. From this a very fine vessel proceeds along the cord, adhering firmly to the amnion ; but, without a glass, it can not be traced all the way to the navel. It has been supposed to be subservient to the nourishment of the fœtus in its early stage. A small artery and vein pass along the cord from the navel to the vesicle which is between the chorion and amnion. These are the *omphalo-mesenteric vessels*.

Besides the blood-vessels, there is in brutes another vessel, which is a continuation of the fundus vesicæ. It passes out at the navel, and, running along the cord, terminates in a bag, which is placed between the chorion and amnion. This bag is called the *allantois*, and the duct the *urachus*. In the human subject, in place of the urachus, we find only a small, white, impervious cord. There is, of course, no allantois.

When the ovum is first visible in the uterus, there is no cord—the embryo adhering directly to the involucre, but it soon recedes ; and, within the sixth week, a cord of communication is perceptible.

The cord at the full time varies in length from six inches to four feet, but its usual length is two feet. When it is too long, it is often twisted round the neck or body of the child, or occasionally has knots formed on it, most frequently, perhaps, by the child passing through a coil of it during labor.*

The vessels of the cord sometimes become varicose and form very considerable tumors. These occasionally so far impede the circulation, as to interfere with the growth of the child, or even to destroy it altogether. Sometimes the vessels burst, and blood is poured into the uterus, which produces a feeling of distension, and excites pain. There can, however, be no certainty of this accident having taken place until the membranes burst, when clots of blood are discharged. If the fœtal and maternal vessels should communicate, the mother is weakened, and may even faint ; and in every instance the child suffers, but does not always die. Delivery must be resorted to, either on account of the effects produced on the mother, or to prevent the destruction of the child.

The cord may, by a fall, or violent concussion of the body, be torn at a very early period of gestation. In this case, the child dies, but is not always immediately expelled. It may be retained for several weeks ; afterward the ovum is thrown off, like a confused mass, enclosing a fœtus, corresponding in size to the period when the accident happened. The cord may be filled with hydatids.

The cord has been found unusually small and delicate, or, on the contrary, very thick. In the latter case, it is always proper to apply two ligatures, instead of one, on the portion which remains attached to the child.† It has happened that, by the shrinking of the cord under the ligature, the child has died from hæmorrhage.

Two cords have been met with, connected with one placenta, or with two placentaë belonging to one child. In other instances, the vessels are supernumerary or deficient. Stories have been told of the cord being altogether wanting, but these are incompatible with the fœtal economy.

* Dr. Hunter thinks he has twice seen these formed previous to birth.

† This was proposed by Mauriceau, in consequence of meeting with an instance where the child suffered much from loss of blood.

SECTION X.

THE PLACENTA, OR AFTER-BIRTH.

A PLACENTA, or something equivalent to it, is to be found connected with the young of every living creature.

We find it requisite that a pabulum should be supplied to every animal, and that certain changes should be performed on the blood, qualifying it for supporting life. In oviparous animals, two different parts of the ovum perform these separate functions. The umbilical vessels of the chick ramify on the membrane of the albumen, and thus come in contact with the air, which is absorbed through the pores of the shell; and, by this contrivance, changes, analogous to those effected by respiration, are produced on the blood. From the inner surface of the membrane of the vitellus, a nourishing fluid is absorbed, and before the chick is hatched, the remainder of this fluid, enclosed in the membrane of the vitellus, is taken within the abdomen, and covered with the abdominal integuments.

In many quadrupeds, we find that after impregnation, certain portions of the inner surface of the uterus enlarge, and form protuberances, having many hollows or foramina, from which a milky fluid can be squeezed. From the chorion, corresponding vascular efflorescences arise, which shoot into these apertures; and thus a union is effected between the mother and fœtus.

In the sow and the mare there is no projection from the uterus, but its surface is everywhere smooth and vascular. There is no efflorescence from the chorion, but it has numerous vessels disposed over it, which are the extremities of the umbilical arteries and veins. In these animals, then, we have no distinct placenta—the chorion alone serving that purpose.

1. The *placenta* is a cellular, vascular, spongy mass, which differs somewhat in size and shape, but is always nearly circular. It is connected by its outer surface to the interior of the uterus, and to the funis by the branches of the umbilical arteries and vein; the membranes pass off at its edge, and encircle the fœtus, forming the bag in which the child and liquor amnii are contained. The most usual place of its attachment is to the posterior and upper part of the uterus; but it may be adherent to the sides, to the edges of the os uteri, or immediately over it. The external convex surface of the placenta is divided into lobules, by fissures, which penetrate a little way into its substance. The internal surface is covered by the amnion and chorion, and on it are arranged in a radiated direction the branches of the umbilical vessels, which pass to form the funis. There is usually a separate placenta to each child, but this is not invariable: in some cases of twins, the funes umbilicales are found to be attached to a single placenta.

2. The *funis umbilicalis* is composed of the convolutions of the umbilical arteries and vein, contained in an investment which is derived from the membranes: its length and size are various, and there are sometimes knots formed in it, especially if it is of more than the ordinary length. It is smaller and weaker at the point of union with the placenta than at the umbilicus of the fœtus: great caution is therefore requisite in extracting the placenta: if this be attempted violently, hastily, or suddenly, the funis will be torn off, and the placenta left remaining in utero. The umbilical cord is mostly attached to the centre of the placenta, but this is subject to some variety—it being occasionally joined to its side, or near its edge.

3. The *membranes* consist of two layers of the decidua, the chorion, and the amnion.

The *decidua externa* is in immediate contact with the uterus.

The *decidua reflexa* adheres to the decidua.

The *chorion* is a strong membrane, in which the fœtus is enveloped; it gives a covering to the funis, and is nearly transparent.

The *amnion* is the thinner of the two; it is transparent, and very strong in texture.

4. The *liquor amnii* varies in quantity; it is, as its name denotes, contained within the amnion. In the early months it is limpid, but gradually becomes thicker, and, toward the end of pregnancy, is various

in its color and appearance. It preserves the fœtus from pressure, while remaining in utero, and at the time of parturition it renders the dilatation of the os uteri more gradual and easy, by forming a soft and compressible wedge, by which the passages are gradually expanded, and prepared for the expulsion of the child.

SECTION XI

THE FŒTAL CIRCULATION.

THE most remarkable peculiarity of the fœtus is its circulation. Its system of blood-vessels differs from that found in the breathing animal, and the blood circulates by a different route. From the internal iliac, or hypogastric artery of the fœtus, on each side, proceeds a branch (or rather the continued trunk itself of each artery), which passes upward on each side of the bladder, emerges at the umbilicus, runs along the cord or funis umbilicalis, and ramifies in the placenta with infinite minuteness. The umbilical vein is formed by the convergence of innumerable branches in the placenta, which finally unite into one vessel; and through this vein the blood passes from the mother to the fœtus, for the purposes of its nutrition and growth. This vein is enclosed in the funis; it passes into the abdomen at the umbilicus, and enters the liver at the cleft which separates this viscus into the right and left lobes, to each of which it gives off branches; the most numerous go to the left side of the liver, one to the vena portæ, and another considerable branch, or rather the continued trunk of the umbilical vein, called the ductus venosus, passes direct to the vena cava inferior. Those branches of the umbilical vein which are distributed in the liver, and also those of the vena portæ, discharge their contents into the inferior cava by the venæ cavæ hepaticæ. The superior and inferior cavæ enter the right auricle of the heart. In breathing animals there is a complete septum or partition between the two auricles, which prevents the passage of the blood from one into the other; but in the *fœtus in utero* there is a communication between the auricles. This opening or communication is called the *foramen ovale*, through which the blood passes from the right into the left auricle. Thus the two auricles are filled with blood at the same time, and, contracting at the same time, propel their contents into the two ventricles. From the left ventricle the blood escapes into the aorta, and from the right ventricle into the pulmonary artery; which latter, instead of conveying all its blood to the lungs, disposes of three fourths of it through a vessel called the *ductus arteriosus*, which, proceeding from the pulmonary artery, enters the descending aorta. By this apparatus nearly the whole of the blood brought to the heart by the cavæ is sent from both ventricles into the aorta: part of this blood is returned to the placenta through the funis by the hypogastric arteries, and the remainder is distributed through the vessels of the fœtus. Thus the blood in the aorta is impelled synchronously by the force of both ventricles; which is probably no more than is absolutely necessary for the accomplishment also of the more distant circulation of the placenta.

Immediately on the child being born, and respiration taking place, the circulation is admitted through the lungs, the foramen ovale becomes closed by means of a valve, and its permanent obliteration is soon effected. Those vessels, also, which were alone subservient to the circulation of the fœtus in utero, soon become obliterated, and exist only as ligaments of trivial or no use; while that portion of the circulation of the liver connected with the ductus venosus now becomes a part of the circulation of the vena portæ.

SECTION XII.

NUTRITION OF THE OVUM AND FÆTUS.

As the chorion and its villi are composed of nucleated cells, we can easily understand their growth, previous to the development of vessels, and we may consider the villi of the chorion, to be to the fœtus, what the spongiolets are to plants; this resemblance holds good, not only in the earlier stages, but even when the ovum is mature; the spongiolets are merely a loose layer of lax cellular tissue, frequently containing ducts: the nutriment of the plant is attracted by them from the surrounding medium, and is passed from one cell to another until it reaches the ducts. In the human ovum the process is the same: the nutritious matter is taken up by the villi, and passed through their cells to the vessels which they contain. After the circulation in the placenta, both fœtal and maternal, is fully developed, it is evident that the ovum is supplied with nutriment, by its villi being there bathed in the maternal blood; but previous to the placental connexion, we must suppose the nourishment of the ovum to be maintained by some matter afforded by the decidua, in short, some material elaborated by the uterine glands. We believe this to be the only use of the decidua, although Velpeau has ingeniously imagined that its office was to prevent the ovum sinking in the uterus, and the placental attachment being formed over the cervix. A milky chylous fluid has been discovered in the cells of the decidua, and it has been observed that the liquor amnii contains globules nearly identical in appearance and properties with those of the thymus gland, which again are known to bear a strong analogy to those of chyle. These two facts contribute much to strengthen the belief which we have expressed above; as the amnion may, by the action of its organic cells, absorb from the chorion the matters which its villi have taken up from the decidua, and deposite them in the liquor amnii, as nourishment for the fœtus; and it is also well ascertained that the solids of the liquor amnii are much more abundant during the early months of gestation, but when the placental connexion between the mother and fœtus is fully established, the nutritive powers of the liquor amnii can exert but little influence.

SECTION XIII.

THE GRAVID UTERUS, OR FULL PERIOD OF PREGNANCY.

WHEN we compare the unimpregnated with the gravid uterus at the full time, we must be astonished at the change which has taken place during gestation, in its magnitude alone.

In the ninth month, the size of the womb is so much increased, that it extends almost to the ensiform cartilage of the sternum; and this augmentation it receives gradually, but not equally, in given times; for it is found to enlarge much faster in the latter than in the earlier months of pregnancy. This is true, however, only with regard to the absolute increase; for, in the first month, the uterus perhaps doubles its original size, but it does not go on in the same ratio. It is not twice as large in the ninth as in the eighth month.

In the second month, the uterus is enlarged in every part without much change of shape. Toward the end of the third month, it generally measures from the mouth to the fundus about five inches, one of which belongs to the cervix. In the fourth, it reaches a little higher, and measures five inches from the fundus to the beginning of the neck. In the fifth, it has become so much larger, as to render the belly tense, and may be felt like a ball, extending to a middle point between the pubis and the navel, and measures about six inches from the cervix to the fundus. In other two months, it reaches to the navel, and measures about eight inches. In the eighth month, it ascends still higher, reaching to about half

way between the navel and the sternum. In the ninth month, it reaches almost to the extremity of that bone, at least in a first pregnancy, when the tightness of the parietes prevents it from hanging so much forward as it afterward does. At this time, it measures, from top to bottom, about twelve, or, from the fundus to the brim of the pelvis, eleven inches, and is more globular than elliptical in its shape. The broadest part is a little above the middle, and is ten inches. For the first month, the shape of the uterus is scarcely altered; it is enlarged in every direction. But after this, it swells before and behind, and soon becomes somewhat globular, having the cylindrical undistended cervix depending from it; after the fifth month, it becomes more oblong, and, by the seventh, it resembles a balloon. These calculations are not invariably exact, suiting every case, but admit of modifications.

In pregnancy, the mouth of the uterus is extended backward, while the fundus lies forward. This obliquity, however, does not take place until the uterus begins to rise out of the pelvis, and it always exists in a greater degree in those who have borne many children.

From this position it appears that the intestines can never be before the uterus, but must lie behind it and round its sides.

The uterus is usually directed to the right side; but in the last months, if the parietes of the abdomen be not relaxed, it mounts more perpendicular.

Previous to the descent of the ovum, the uterus begins to enlarge, especially at its upper part, or fundus; and it is worthy of notice, that the posterior face of the uterus always distends more than the anterior one, as we ascertain by examining the situation of the orifices of the Fallopian tubes.

When the fundus begins to increase, it not only grows heavier, but also presents a greater surface for pressure to the intestines above; it, therefore, will naturally descend lower in the pelvis, and thus project further into the vagina. In this situation the uterus will remain, until it becomes so large as to rise out of the pelvis. This ascent takes place generally about the sixteenth week of pregnancy, if the pelvis be well formed, and the uterus increase in the usual ratio.

In the fifth month of pregnancy, the cervix begins to be developed; so that, by the end of the month, one quarter of its length has become distended, and contributed to augment the uterine cavity; the other three fourths, which remain projecting, become considerably softer, rather thicker, and more spongy. In another month, one half of the cervix is distended, and the rest is still more thickened, or the circumference of the projecting part greater; the uterus has also risen further up, and the vagina is more elongated. In the seventh, we may, with the finger, distinguish the head of the child pressing on the lower part of the uterus, which we can seldom do before this. In the eighth month, the neck is nearly effaced, and its orifice is as high as the brim of the pelvis. In the ninth month, the cervix is completely developed, and the whole uterus more enlarged. The alterations of the cervix are discovered by introducing the finger into the vagina, and estimating the distance between the os uteri and the body of the uterus, which we feel expanding like a balloon.

Soon after conception, the os uteri is said to close, but this is only correct in so far as it is, at the end of the cervix, shut up by albuminous substance. Its lips become a little softer, rather thicker, and the orifice sometimes, but not always, seems more circular. The changes, however, in the early period are not so marked as to afford of themselves positive indications of pregnancy. In proportion as gestation advances, and the cervix stretches, the lips become rather thicker, and, although in a few instances they may shorten, yet they always continue to project until labor commences. All the inner surface of the cervix uteri, in the whole course of gestation, is full of glandular follicles, which secrete a thick, viscid mucus. This extends from the one side to the other, and fills up the top of the mouth of the uterus very perfectly, being thus interposed as a guard between the membranes and any foreign body. By maceration, it may be extracted entire, when a mould of the lacunæ will be obtained by floating it in spirits, saturated with fine sugar.

Vesalius describes three strata of muscular fibres—transverse, perpendicular, and oblique. Malpighi describes them as forming a kind of network; while Ruysch maintains that they appear at the fundus, in concentric planes, forming an orbicular muscle. Dr. Hunter paints them as transverse in the body of the

uterus, but at the fundus describing concentric circles around each of the Fallopian tubes. These contradictions of anatomists serve to show, what may readily be seen by examining the uterus, that the fibres are not very regular and distinct in their course, but the circular seem to predominate. The lips of the os uteri have few, if any, muscular fibres.

The increased size of the uterus is by no means entirely owing to the addition of muscular fibres. These become indeed larger and better developed, but do not contribute so much to the increase as the enlargement of the blood-vessels, and perhaps the deposition of the cellular substance. This gives the uterus a very spongy texture, and makes it so ductile, that a small aperture may be greatly dilated without tearing. From examination, it appears that, although the whole uterus do not grow thinner, in proportion to its increase, yet it does, at the full time, become a little thinner near the mouth; while the fundus continues the same, or perhaps grows rather thicker, at least where the placenta is attached.

No one, who understands the anatomy of the ligaments of the unimpregnated uterus, will be surprised to find a great change produced in their situation and direction, by pregnancy. The broad ligament, which is only an extension of the peritoneum from the sides of the uterus, is, in the ninth month, by the increase of that viscus, spread completely over its surface; and, consequently, were we to search for this ligament, we should be disappointed. Its duplicatures are all separated and laid smoothly over the uterus. It will therefore be evident that we can no longer find the ovaria and Fallopian tubes floating loose in the pelvis, nor the round ligaments running out at an angle from the fundus uteri to the groin. All these are contained within duplicatures of the peritoneum, or ligamentum latum; and therefore, when this is spread over the uterus, it follows that the ovaria, tubes, and round ligaments, particularly the last, can not now run out so loosely from the uterus, but must be laid flatter on its surface, by the extended peritoneum. This description applies only to the state of the uterus at the full time. Earlier, we may readily observe the broad ligament floating out, so that the ovaria are more distant. The loose extremity of the tube becomes more expanded, and very vascular, and forms a kind of cavity called the antrum.

The state of the ovarium has already been described.

CHAPTER IV.

PREGNANCY.

SECTION I.

THE SIGNS OF PREGNANCY.

WHEN impregnation has taken place, certain changes are usually produced in the female system and generative organs. It is very important that the accoucheur should be able to *distinguish these changes* from others which resemble them, and to determine whether the female be *pregnant or not*; because her reputation, as well as the *moral reputation of the female*, will frequently depend on a correct or incorrect diagnosis of a supposed case of pregnancy. Young women who are illegitimately pregnant, when suspected, will generally *deny the fact*, and that with great warmth, declaring that they are slandered, if he concur in this opinion; so that we must depend upon the accuracy of *our own knowledge*, and expect no assistance from the female under such circumstances.

We shall find others who are not pregnant, who suppose themselves to be so, or are supposed to be so by others, in consequence of suppressed menses, enlarged abdomen, &c. And we shall doubtless

find that it will take all the tact and judgment we can possess, to enable us sometimes to form a correct opinion on a case of supposed pregnancy. The following amusing anecdote, which occurred in this city some years ago, may serve to illustrate the importance of knowing whether a woman is pregnant or not, perhaps better than any argument which we could advance :—

A lady, aged forty-seven, who had been married since her thirtieth year, had entertained a most anxious desire to become a mother, but had not succeeded in her wishes, and was about abandoning all hope, when, of a sudden, she noticed that her abdomen began gradually to enlarge, and she really imagined herself pregnant. In addition to the ordinary symptoms of gestation, she thought she distinctly felt the motion of her child. She received the congratulations of her friends, was complimented on her prowess and the final accomplishment of her hopes after years of fruitless effort, and commenced making the necessary preparations for her approaching accouchement. Her physician was sent for, and was informed that his services would be required, &c. In the course of a few months, the labor commenced ; a messenger hastened to admonish the doctor that the lady's time had come, with a request that he would lose no time in reaching the bedside of his delighted patient. The doctor arrived—all in the house was confusion—the nurse was enchanted—the husband could scarcely realize the advent of this long-expected era in his life—the patient was in actual labor—the pains frequent and distressing. The physician was entreated to lose no time in assisting madam : he instituted an examination—the silence of death now pervaded the lying-in chamber to hear from the lips of the oracle the exact facts of the case. They were soon made joyful by hearing from the doctor that all was right—that the labor was quite advanced, and in a very short time would be completed. The sufferings of the patient increased—she was requested to make the most of her pains—to *bear down and assist nature*—when, lo ! in the midst of one of those powerful efforts to “assist nature,” there was heard an explosion, which struck terror into the hearts of all present, the doctor included. The patient immediately exclaimed, “*Oh ! dear doctor, it's all over : do tell me if it is a boy !*” The explosion was nothing more than an escape of air from the bowels, the patient having mistaken flatulence for pregnancy, and the rumbling of the gas in the intestines for the motions of the fœtus. Comment is here unnecessary ; let this case, however, admonish all of the necessity of caution.

It is a well-known fact that Dr. Clarke, physician to the queen of England, pronounced one of her maids-of-honor pregnant, and occasioned great affliction, both to herself and all her friends : and it was afterward proved that she labored under disease, and not pregnancy. Physicians, without great care, may on this subject make many very unpardonable mistakes. One which came to light a short time ago, in the neighborhood of this city, we may relate, as a warning to all to take care how they give an opinion on this subject without indubitable evidence. The anecdote is now annually repeated in one of our colleges in this city by the professor of midwifery, as a warning to all students and others who may be present :—

A minister and his daughter, a young lady aged eighteen, emigrated to this country ; and, before leaving England, an attachment was formed between her and a respectable attorney, which resulted in a matrimonial engagement. Soon after this, her health began to decline. There was loss of appetite, irregularity in her menses, and swelling of her abdomen ; she was, in short, suspected of pregnancy. The lawyer, hearing of these reports, immediately wrote to her father, and begged to be released from the contract, which was acceded to. Her physician likewise pronounced her pregnant. But her father, feeling indignant at this imputation against her virtue, requested an additional consultation, which resulted in the same opinion. The father and daughter now set sail for America ; and on the passage she became very ill, vomiting from sea-sickness. A physician on board, concurring in the previous opinions given, apprehended a premature delivery. On her arrival in this country, and becoming located near New York, a physician was sent to visit her, and, upon examination, pronounced her *not pregnant* ; and gave his opinion that the lady was afflicted with a tumor in the uterus, and that she was laboring under the last stage of consumption : which proved to be the case, and she survived but a short period. The same physician held a *post-mortem* examination, and found that the lady had been laboring under a cal-

careous tumor of the womb, which had given rise to all the symptoms resembling pregnancy. This instance shows still further the necessity of exercising great caution in giving our opinion in a supposed case of pregnancy.

Numerous cases are on record, where a false diagnosis in women convicted of capital offences, has led to most lamentable results, and where dissection of the body after death has shown that she was pregnant. Dr. Evory Kennedy has recorded an interesting case of this sort which occurred at Norwich, England, in 1833, when a pregnant woman was on the point of being executed through the ignorance of a female jury. We may also mention a dreadful case of this nature which occurred to the celebrated Baudelocque, at Paris, during the horrors of the French revolution. A young French countess was imprisoned during the revolution, being suspected of carrying on a treasonable correspondence with her husband, an emigrant. She was condemned, but declared herself pregnant; two of the best midwives in Paris were ordered to examine her, and they declared that she was not pregnant. She was accordingly guillotined, and her body taken to the school of anatomy, where it was opened by Baudelocque, who found twins in the fifth month of pregnancy!

In many instances the character and happiness of the individual must depend upon the judgment which the practitioner pronounces; and, painful as will be the task of communicating an opinion which implies guilt and loss of honor, how infinitely revolting and inexcusable must that step be considered which turns out to have been founded upon an incorrect diagnosis! Hence the importance of separating those symptoms of pregnancy which may be considered certain, and therefore trustworthy, from the crowd of others, which, although collectively they may warrant a suspicion, yet never can justify a decision that pregnancy exists, more especially in cases where so much is at stake. No two symptoms have led more frequently to this cruel error, and therefore to the most unjust suspicions, than the cessation of the menses with swelling of the abdomen, and yet from how many different causes may they arise besides that of pregnancy! Putting even the impulse of common feeling aside, we would ask how a practitioner can dare recklessly to incur the responsibility of injuring a woman's character by hazarding an opinion which involves so much, and is based upon symptoms which, by themselves, prove so little? Whether he exercise his profession in town or country, cases of doubtful pregnancy will constantly come under his notice. We can not, therefore, too strongly urge the importance of ascertaining how many of the certain symptoms are present, before we allow ourselves to be influenced by those which are uncertain.

In speaking of the enlargement of the abdomen as a sign of pregnancy which is extremely equivocal, Dr. Dewees well observes: "But little reliance can be placed upon this circumstance alone, or even when combined with several others; for I have had the pleasure in several instances of doing away an injurious and cruel suspicion, to which this enlargement had given rise. Within a short time, I relieved an anxious and tender mother from an almost heart-breaking apprehension for the condition of an only and beautiful daughter on whom suspicion had fallen, though not quite fifteen years of age: this case, it must be confessed, combined several circumstances which rendered it one of great doubt, and, without having had recourse to the most careful and minute examination, might readily have embarrassed a young practitioner. This lady's case was submitted to a medical gentleman, who, from its history and the feel of the abdomen, pronounced it to be a case of pregnancy, and advised the sorrow-stricken mother to send her daughter immediately to the country as the best mode of concealing her shame. Not willing to yield to the opinion of her physician (a young man), and moved by the positive denials of her agonized child, the mother consulted me in this case. The menses had ceased, the abdomen had gradually swelled, the stomach was much affected, especially in the morning, and the breasts were a little enlarged. On examination, it proved to be a case of enlarged spleen."

We occasionally observe certain conditions of the female system which put on a most striking resemblance to pregnancy, both functionally as well as organically, without at all depending on the actual presence of pregnancy. The abdomen begins to swell from the pubic region exactly in the same gradual manner as in pregnancy; the breasts become painful, swell, and secrete a lymphatic fluid, frequently resembling milk; the digestive organs become disordered; there is irregular appetite, nausea, and incli-

1.1

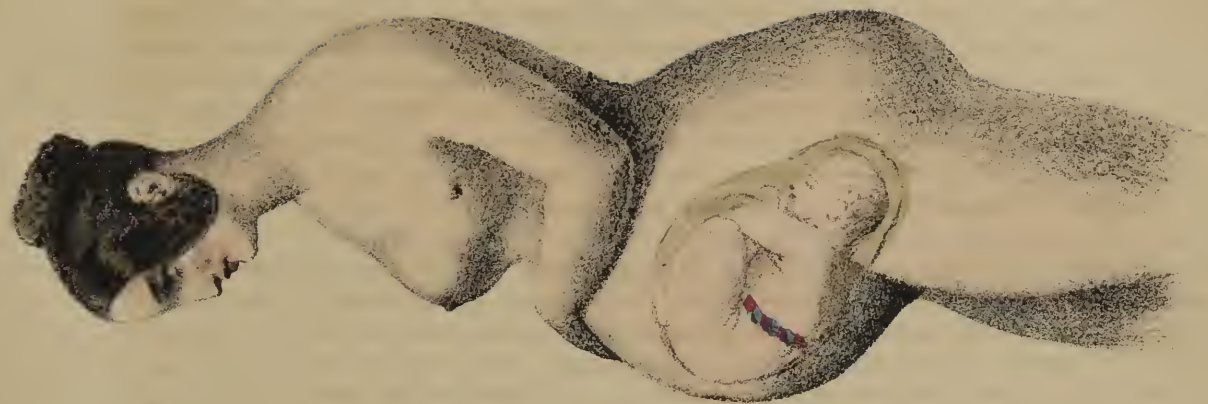


PLATE A.

Illustration of Vegetable Life.

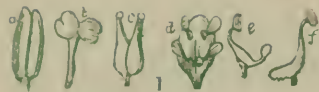


Fig. 1. Reproductive parts of the flower, showing stamens and pistils.
a Lily. c Potato. e Ginger.
d Senna. d Barberry. f Sage.



Fig. 4. The seed of the Bean, with its cotyledons (aa) separated. (b) Germ.

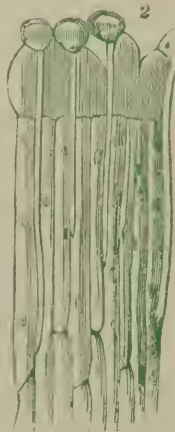


Fig. 2. Section of the top of the style of snapdragon, showing the passage of the pollen tubes between its cells.

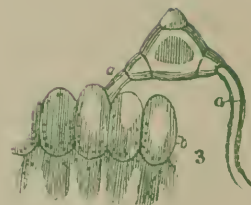


Fig. 3. Pollen grain of *Enothera Biennis*, sending its tubes (a) between the cells (b) of the Stigma.

Illustration of Animal Life.

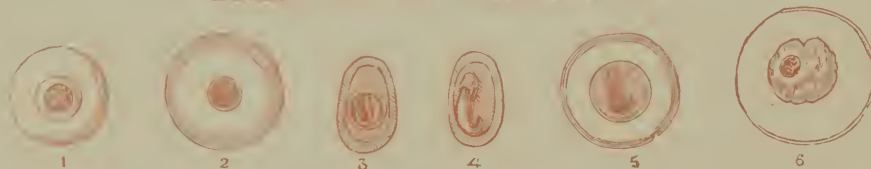


Fig. 1. Ovum of a Rabbit, third day after impregnation, magnified 40 diameters.
Fig. 2. Ovum of the Frog, recently laid, magnified 2 diameters.
Fig. 3. The Ovum of the Water Newt, magnified rather more than twice.
Fig. 4. Ovum of the Water Newt, more fully developed.
Fig. 5. Embryo of the Frog, more fully developed.
Fig. 6. Ovum of a Rabbit, seven days after impregnation, magnified 40 diameters.

Illustration of Human Life.

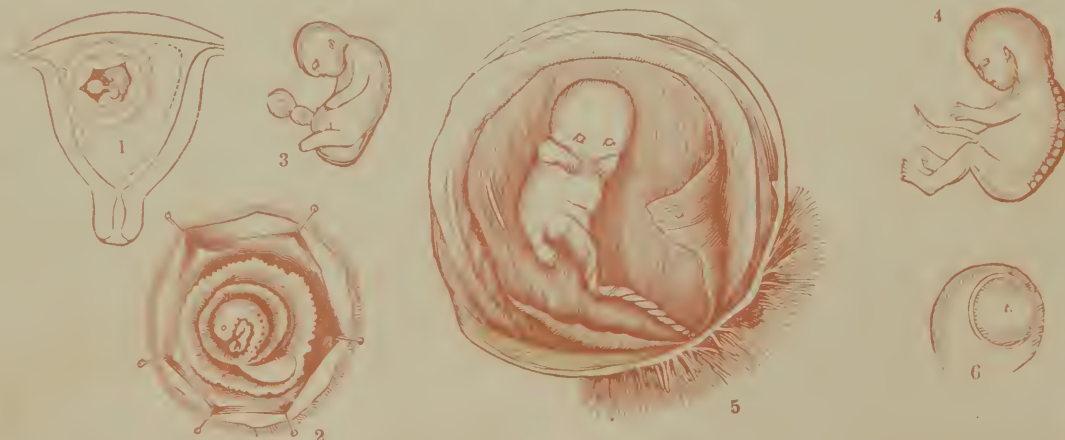


Fig. 1. Diagram of a human fetus of the third week, enclosed in the decidua. Size of life, in its natural situation in the womb.
Fig. 2. Ovum more advanced, with the membrane laid open.
Fig. 3. Fetus not fully developed.
Fig. 4. More advanced—two months after conception.
Fig. 5. Fetus within the membrane in the early months of pregnancy—head very large, and extremities small and imperfectly formed.
Fig. 6. Corpus Luteum, or appearance of the Ovarium after conception.

nation to vomit; constipation, muscular debility, change in the color of the skin, and frequently of the whole condition of the body; the nervous system suffers, and even the mind itself frequently sympathizes; the patient is sensible of movements in the abdomen like those of a living fœtus, then bearing-down pains running from the loins to the pubes; at last actual labor-pains come on as with a woman in labor, and if by chance her former labors have been attended by any peculiar symptoms, these, as it were, to complete the illusion, appear likewise.

In the early part of my practice, females have frequently applied to me, professing to labor under some diseased irregularity of the menses; when, on investigation, I discovered and pronounced some of them pregnant: and although it was strenuously denied at the time, I have afterward been called to attend them in labor. While, on the other hand, I have frequently known various diseases of the womb, complicated with disease in other parts of the system, *so closely to resemble pregnancy*, as to deceive many. Hence the necessity of great caution and accuracy. I believe I have never yet given a wrong opinion on this subject. In making up our minds, we should not be too positive, *unless indubitable evidence be present*. If we are doubtful, let us say so. Our opinion must not be formed on one, but on the concurrence or the assemblage of reliable symptoms. The following are the principal symptoms of pregnancy:

1. **THE MENSES.**—If the menses are arrested, and the female had previously been both regular and in good health, and there is no other evidence that she has taken cold—and, more than all, if, added to this, there is *no dizziness of the head*—there is a very strong probability that she is pregnant. If the female, after sexual intercourse since her last menstruation, has experienced any sudden excitement, or change of the system, as chills, lassitude, &c., without any known adequate cause, it affords additional evidence that she has conceived.

2. **MORNING SICKNESS.**—In most cases, not in all, a very distressing nausea or sickness, resembling sea-sickness, is experienced, especially in the morning.

3. **SALIVATION.**—There is sometimes in pregnancy a preternatural disposition to secrete saliva, and especially to spit what some term an “*English shilling*.”

4. A short time after conception, there is often a preternatural fulness of the abdomen in the *evening*; but in the morning there is a perfect subsidence, and the abdomen then appears even less than natural.

5. The breasts or mammary glands become larger than usual, the small papillæ become elongated, and the areola or circle around it becomes of a darker hue. The milk is sometimes secreted early in pregnancy, and toward the end it often escapes from the nipple.

6. The urine is generally more abundant, and more pale and limpid.

7. **NECK OF THE UTERUS.**—In the early part of pregnancy, the neck of the womb becomes *lower in the vagina*, and the os is closed by coagulable lymph. As pregnancy advances, *the neck shortens*.

8. A gradual and prominent enlargement of the abdomen, of a peculiar rotundity, and a globular-like form, imparting a peculiar appearance and gait, easily recognised.

9. The appetite is very capricious—sometimes the patient eating enormously; at others, scarcely able to eat at all.

10. **NERVOUS SYSTEM.**—In most cases of pregnancy there is great irritability of the nervous system. Cramps and numbness of the lower extremities are sometimes accompaniments of pregnancy.

If these symptoms generally are present, in the great majority of cases the female is pregnant, but not in all cases when present. The only *infallible* signs of pregnancy are—

1. **THE MOVEMENT OF THE CHILD**—not the woman's fancies—for many women have been deceived on this point. To ascertain the movement of the child, place the woman on her back, with the legs a little flexed; bare the abdomen, and dip the hand in some very cold water, and apply it suddenly over the tumor: and the motions of the child will infallibly, if alive, declare its existence.

2. **BEATING OF THE FŒTAL HEART.**—By the stethoscope, or even by the naked ear, applied to the abdomen of the mother, the fœtal heart can be heard to beat, at the rate of one hundred and thirty to one hundred and forty per minute. When this is heard, of course it is *infallible*; but we should never forget that a female may be pregnant, and neither of these signs be present, because neither of them are

available until after *quickening* : and even then the child may die. So that, although these last are infallible signs when they are present, yet their absence does not as certainly prove the negative : since the *child may be dead*, or it may not have arrived at the age at which the test is available.

SECTION II.

THE DURATION OF PREGNANCY.

EXPERIENCE has shown that the ordinary term of human pregnancy, wherever it has been capable of being determined with any degree of accuracy, is two hundred and eighty days, or forty weeks ; and this period seems to have been generally allowed even from the remotest ages. As, however, it is so difficult to fix the precise moment of conception, it has been customary in different countries to allow a certain number of days beyond the usual time : thus the “Code Napoléon” ordains three hundred days as the extreme duration of pregnancy, allowing twenty days over to make up for inaccuracy of reckoning. In Prussia it is three hundred and one days, or three weeks beyond the usual time. In England the limit of gestation is not so accurately determined by law, and therefore gives rise occasionally to much discrepancy of opinion.

On this subject Dr. Huston, of Philadelphia, has the following observations :—

“There can be no doubt but that, as a general rule, gestation in the human female is completed in about two hundred and eighty days ; but we have well-attested cases on record in which it certainly continued much longer—sufficiently numerous, indeed, to establish the fact that much variety occurs in that respect. I have known at least two instances in which I had the strongest reasons for believing that it extended, in one case two weeks, and in the other three weeks, beyond the usual period, or nine calendar months. It is undeniable that children are often born short of that period, healthy and well grown ; and there is certainly no reason why nature should not deviate from her accustomed cause in *delaying* as well as *anticipating* the time : especially is it unreasonable to deny that such deviations may occur in the human female, when it is known that it happens every day with inferior animals that are far less exposed to the causes most likely to produce such irregularities.”

By the law of Scotland, a child born six months after the marriage of the mother, or ten calendar months after the death of the father, is considered legitimate. The last case of labor which I attended, the woman had evidently run her full period, yet she did not calculate to be confined for thirty days afterward : all which shows the difficulty of ascertaining precisely the time of conception, or the duration of pregnancy.

It would therefore appear that, in making up our minds on the subject of the duration of pregnancy, we must allow considerable latitude, in consequence, first, of the difficulty of at all times ascertaining the *precise moment* when conception takes place ; and, secondly, from our knowledge of the *peculiar organization* of some women, and the protracting influence which *depressing passions* may have on the duration of pregnancy in such cases. We have on record an account of the decision of a court of law in Europe, in favor of a lady who was delivered of a child *ten months after the death of her husband* ; and from the reputation of the woman, and other circumstances, no doubt was entertained of the correctness of her statement. From all which facts, the physician and others must learn to be very guarded in their opinion in all cases where the *character and reputation of the person is involved*, and that we should all exercise great charity toward all those charged with guilt of this nature : especially when we remember that considerable variations frequently take place in the duration of the pregnancy of our *domesticated animals*, of whose period of gestation we can keep an exact account—as the cow, the mare, the sheep, &c.

SECTION III.

THE SIGNS OF IMMATURITY AND MATURITY OF THE FŒTUS.

It is unnecessary for me to enter here into a long detail of the signs of immaturity which the fœtus presents, because they are merely the changes which take place in its different organs, as its development progresses, and these have already been detailed at full length.

To determine the age of a child, then, the first points to be examined are—its length and weight; the position of the central point of the body; the size of the head; the length of the hair; the dimensions of the fontanelles; the organization and development of the nails; the texture, density, and color, of the skin; the presence of fat; and the sebaceous coating of the skin. We ought then to observe the state of the various functions—respiration, digestion, and circulation.

The length of the fœtus at various times, has been already carefully given. At the full time it varies much, but the average is between eighteen and twenty-two inches. The weight has also been noticed; at the full period (two hundred and eighty days) that of the male has been found on an average of nearly seven thousand cases to be six and three quarters pounds, and that of the female five and a half pounds. *The central point of the body* is situated, at the sixth month, on the ensiform cartilage of the sternum; at the seventh, between the ensiform cartilage and the umbilicus, but nearer the former, yet this varies much; in one case by Devergie, it was found only two lines above the umbilicus; in another, an inch and a half above it. At the eighth month, it is still nearer the umbilicus; and at the ninth month, it is said to be situated at the umbilicus; by Moreau it is placed ten lines above it, and by Devergie seven; it appears to me that the position of the central point of the body is far from being so infallible a sign as is generally alleged. *The hair of the head* appears like down at the fifth month, and becomes longer until the ninth month, when it has been seen two or three inches in length, and that especially if of a dark color. *The head* in the fifth month is disproportionably large when compared with the rest of the body; but as the body becomes larger, this disproportion diminishes; *the fontanelles* are also very large, and wide in the early months, and the bones move with very great freedom on each other; but as the child grows older, the fontanelles become smaller, and the bones move with less ease, although they still overlap to a certain degree with facility. In a fœtus at the full time, the average dimensions of the head are as follows: from the vertex to the root of the nose, four inches; from the vertex to the chin, five inches; from the one spheno-parietal articulation to the other, three inches six lines; the circumference round the superciliary ridges and occipital protuberance, fourteen inches.

The nails begin to appear in the fourth month; are very distinct in the fifth, but are still red and fleshy. They do not yet reach the extremities of the fingers in the seventh; in the ninth, they cover the fingers to their points.

The skin, in the fourth month, is reddish and dense; in the sixth, it presents fibres in its substance, and is covered with a white silvery down; in the seventh, it is still reddish, but more fibrous, thicker, and generally much wrinkled; this gives to the features the expression of old age; at the ninth, the skin is firm, smooth, at first bluish, but afterward reddish, and then of the usual skin-color.

The fat is first observed in the fourth month, and gradually increases, and generally abounds in considerable quantities at birth. *The sebaceous coating* first appears in the seventh month, is well marked in the eighth, and generally abundant in the ninth.

As to the *function of respiration*, a mature child breathes freely, and cries loudly; but an immature child breathes with difficulty, as if it were about to be choked, or as if it required to rest and recover itself before making a second inspiration, and instead of crying, it utters frequent low moans.

With regard to the *function of the digestive organs*, the mature infant sucks vigorously, and passes meconium and urine soon after birth; but the immature infant can not suck, perhaps not even swallow, and its bowels are moved with difficulty.

As to the *circulation* in the mature child, the heart beats strong and quick ; in the immature infant, feeble and slow ; it is unable to maintain its own warmth, and requires to be carefully wrapped up and its heat maintained by various artificial means ; it also sleeps almost constantly. Such are the differences which characterize the mature and immature fœtus ; and by means of these, together with an examination of the degree of development of individual organs as above given, a tolerably accurate opinion may be formed as to its age.

SECTION IV.

ABNORMAL OR UNHEALTHY PREGNANCY.

By abnormal pregnancy we mean all those pregnancies which deviate from the usual natural order—whether as to time, place, form, or appearance of the fœtus.

SUPERFETATION.—By this term we understand the impregnation and development of an *additional ovum or fœtus* in a woman not only *already pregnant*, but after that function has *made some progress*.

The circumstances which have given rise to, and tended, from time to time, to support the idea of superfœtation, are, females in plural deliveries producing infants of different sizes and various colors, and *within a few weeks or months of each other*.

And although some doubt the fact, yet, from some well-authenticated records, it seems quite probable. One strong reason in favor of its probability is, that the *menses sometimes continue to flow for several months after impregnation has taken place*, which appears in such cases to continue the female in a condition *capable of again conceiving*.

The production of a fœtus of different colors at a birth is a strong evidence of this occurring. The oldest on record is by M. Buffon, in which a woman at Charleston, South Carolina, produced in 1714 a dark and a white child at one birth ! This remarkable occurrence led to an investigation, which the woman herself at length satisfactorily explained, by acknowledging that, one morning, after the departure of her husband, the black valet entered her bedroom, and menaced her with instant destruction, unless she submitted to his embraces. Such was her story, which, whether true or false, is of but little consequence to the fact itself, viz., that she had conceived by *both of them*, and that, of course, at *different times*, either of a longer or a shorter interval.

Dr. Mosely, also, relates an example somewhat similar to the above, which occurred on the Shortwood estate, on the island of Jamaica, while he resided there : A negro woman on the estate produced two infants at a birth, the one the same color as herself, the other a mulatto. On inquiry as to their want of resemblance, the woman replied that *she was perfectly aware of the cause* ; for that, one morning, after her sable husband had quitted her, she received the embraces of a *white man* who came to her hut. These cases, however, should not be regarded as examples of superfœtation, but rather as instances of contemporaneous conception, arising from sexual intercourse with two different men.

But there are many cases on record in which the fœtus has been expelled at intervals of weeks and even months of each other. These cases are not always so easy to understand or explain. The most extraordinary cases of this kind on record are of rather recent date. The first case is one reported by Dr. Desgranges, of Lyons, in France. He reports that the wife of Raymond Villiers, of that city, married at twenty-two years of age, became pregnant five years afterward, and on the 20th of May, 1799, was delivered at the seventh month. In a month from this time she conceived again ; and seven months after, she brought forth a living child. This delivery, however, was not followed by the usual changes, such as the milk, lochia, diminution of the abdomen, &c. Two surgeons visited her, but being unable to account for these circumstances, they called Dr. Desgranges in consultation : and he gave as his opinion that there was another fœtus in the uterus.

Three weeks after this opinion was given, the movements of the child confirmed it: *and five months and sixteen days after the birth of the first infant, Madame Villiers produced another living daughter!* The milk was now secreted, and the mother enabled to nurse it.

The next case we shall mention is that recorded by Dr. Maton. Mrs. T——, an Italian lady, married to an English gentleman attached to the commissariat of the British army, then in Sicily, was delivered of a male child on the 12th of November, 1807, which had every appearance of health. The lady was delivered under very painful circumstances, the child having been expelled among a quantity of straw, at midnight, in an uninhabited apartment, and it only lived nine days. (Such privations are not uncommon to ladies who accompany invading armies.) On the 2d of February, 1808, rather more than *two and a half months afterward*, Mrs. T—— was delivered of *another male infant, completely formed*, and apparently in good health. When about three months old, this child fell a victim to measles.

Sachias relates a case, where a widow, eight months after the death of her husband, was delivered of a deformed fœtus, which died during labor. The woman's abdomen continuing large, it was suspected to contain a second child; but all efforts to procure its expulsion proved unavailing, until one month and a day afterward, when labor supervened, and a healthy living infant was produced.

M. Velpeau, in his "Elements of Midwifery," relates the case of a Madame Bigaud, who, on the 30th of April, 1748, produced a living male child, and, on the 17th of September following, another infant, which was also living and lively. He also gives another case, of a woman named Artes, who, in 1796, gave birth to a child at the full term, and, five months afterward, to another, which also was thought to be at the full term.

Lobstein, in the "London Medical and Physical Journal," states that he delivered a woman of two infants, *one a month after the other*; and was able to convince himself that she had *two uteri*, and to each *a distinct branch of the vagina*.

Dr. Purcel, in examining the body of a woman, discovered that she had a *double uterus*, in one of which he found a fœtus. There was but one tube and ovary to each uterus.

Dr. Norton delivered a woman of a *black fœtus of the eighth month*, and of a *white one of the fourth month*. Having attempted to extract the placenta of the first before the second was born, he discovered a passage so narrow that it would not admit his hand; so that this woman must have possessed a double uterus, and to each a vagina.

There is a preparation of a *double uterus* in the museum of Professor Rockitanski, at Vienna, and each uterus presents the appearance of having been, at one time at least, pregnant.

While, therefore, we admit that superfœtation is possible, yet the majority of supposed cases, we doubt not, will be found to be either the result of a *double uterus*, the expulsion of a *twin at seven months* (while the other is carried to *full time, or even beyond*), or a *blighted ovum*, in a double or treble conception, which has ceased to grow, and presents, when born, the appearance of a fœtus several months, it may be, younger than the others.

SECTION V.

MOLE PREGNANCY.

WHEN, from any cause, the life of the embryo is destroyed during the early weeks of pregnancy, one of these two results follows: either *expulsion takes place*, or the *membranes of the ovum become remarkably changed*, and continue to grow for some time longer, until at length they form a fleshy fibrous mass, called *mole or false conception*.

Moles generally increase faster in size than natural pregnancy; so that generally the uterus is as large in the third month, as it is in the fifth month in true pregnancy.

In one form of mole, the uterus is filled with a large mass of vesicles of irregular size, and appear like *hydatids*. Many other varieties of molar growth have been enumerated by authors, too tedious to specify. In fact, the term mole has been rather vaguely applied to almost every shapeless mass which has issued from the womb, whether as coagulated blood, tumors, or blighted ovum after conception. For the first eight or ten weeks, we know of no symptom by which we can distinguish molar from natural pregnancy. In all cases of moles, flooding sooner or later takes place. The patient's health declines: a discharge from the vagina usually succeeds to swelled feet; the discharge from the womb is usually excessively putrid and offensive, and at length the mole is discharged.

The process of expulsion resembles that of abortion: pain in the back, groins, and lower part of the abdomen, with more or less discharge of blood; but at length bearing-down pains succeed, and the mass is expelled. Sometimes, on examination, we shall find the os uteri relaxed and dilated, and probably a portion of the mass protruding into the vagina: *it may then be seized by the fingers and extracted*. The after-treatment must be the same as in abortion. Those who suffer from frequent molar pregnancies, generally have their health much reduced by leucorrhœa, floodings, or obstructions of the menses, with many other troublesome and dangerous symptoms, the recovery from which will be slow and difficult—requiring generally a course of tonic medicines, change of air, &c.

SECTION VI.

EXTRA-UTERINE PREGNANCY.

TUBAL, ovarian, and ventral pregnancy, occasionally occur. The embryo, or something very much resembling it, is sometimes found in the ovaria, sometimes in some parts of the Fallopian tubes, or even in the cavity of the abdomen.

According to the opinion entertained by modern physiologists on conception, as before stated, the ovum or egg is impregnated in the ovaria, and is afterward conveyed into the uterus by the Fallopian tubes. In these cases, they consider that these tubes do not perform their office from some cause; sometimes they do not take it up at all: then we have ovarian pregnancy. Sometimes the ovum is left in the tubes, constituting tubal pregnancy. Sometimes they imagine that the fimbriated extremity of the tubes, after seizing the ovum, drops it into the cavity of the abdomen, constituting ventral pregnancy. I have always, however, entertained very serious doubts whether a *perfect fetus was ever developed in these parts*, particularly in the ovaria, as I have intimated on another occasion in a previous chapter. It does appear to me, from both reason and analogy, founded on the facts brought to light by recent physiological investigations, that the elementary rudiments of the fœtus furnished by the female alone, are found deposited in other parts besides the uterus, and that there is afterward a constant accumulation of new materials, which have at length produced a formation resembling somewhat a human fœtus.

I have, however, in my anatomical museum, models of a perfectly-formed fœtus, both in the ovary and in the Fallopian tube. These models I imported from Paris, and I have no reason to doubt their accuracy. But, even allowing that such have been found perfectly formed, thus proving that the ovum has been impregnated by the male semen, *is it not as easy to believe that the impregnated ovum, in its early stage after impregnation, escaped from the uterus into the Fallopian tubes, as it is to believe that the impregnated ovum always passes through this small aperture into the uterus?*

Besides, from the great length of time which these pregnancies frequently exist, which is sometimes for many years, the phenomena appear to be utterly different from ordinary pregnancy. Professor Neagle, of Helderberg, has a preparation of a fœtus which was retained for fifty-four years. This singular deviation from the usual course of pregnancy is happily of rare occurrence; but, when it does occur, it seldom terminates favorably. If it occur in the Fallopian tube or in the ovary, these become immensely

distended into a sac, or cyst, to the sides of which the placenta adheres. As the ovum increases, the sides of the tube at length give way from the immense distension, and the patient usually dies from internal hemorrhage. In ventral pregnancy, the sac is attached to the abdominal viscera, and is usually imbedded among the convolutions of the intestines.

In ventral pregnancy, there is plenty of room, and the child may not only be carried to the full term, but for many years. Hence you perceive that the length of extra-uterine pregnancy will depend very much upon its situation. Thus, if it be in the *Fallopian tube*, it rarely lasts beyond *two months*; whereas, *ovarian* pregnancy will continue for *five or six months*; while *ventral* pregnancy may be continued for an *indefinite length of time*. Although the uterus does not receive or retain the ovum in its cavity, as in natural pregnancy, yet the uterus undergoes many of those changes which take place in it in regular pregnancy.

TREATMENT. — This must be regulated by the various symptoms. If the abdomen is tender to the touch, warm fomentations must be applied. If the bowels are costive, regulate them. If there is an effort of nature to discharge the foetus by means of an abscess, the powers of the system must be sustained by tonic medicine and nutritious diet through the long-protracted struggle. Sometimes the abscess opens into the intestines, and portions of the foetus come away from time to time, and then the passage of the bones produces very great suffering. Sometimes the mass adheres to the parietes or sides of the abdomen, and an operation is then performed to extract the foetus or foreign mass. The danger of an operation, however, is frequently very great. A lady in this city, a short time since, was operated upon, and the substance extracted; and the patient, it is stated, is recovering. When the mass contracts adhesions to the abdominal walls, and form an abscess for the purpose of expelling it, the patient is most likely to recover. But the presence of such a mass of semi-decomposed animal matter in the abdomen, whatever the nature of it may be, is of itself sufficient to materially injure the general health.

SECTION VII.

MONSTERS.

By the term *monster*, we understand a foetus *which differs from the natural order of organization*, whether the organization be compatible with life or not. They may consist of *deficiency, excess, or misplacement of parts*. Productions of this nature are formed, not only in the human, but also in the animal and vegetable kingdoms. I saw a lamb exhibited some years ago in this city, which was in every respect fully developed, but had two heads on one body, and also supernumerary extremities.

I have a sister who was born with an additional thumb, which she continued to wear till she was a young woman, when it was extirpated. I also have a nephew who has six toes and six fingers, which in many families is hereditary. Sometimes there is a deficiency of parts. A case is related where the child was born with the nose deficient. Jisew, in 1718, exhibited to the Royal Academy of Sciences, in England, a Portuguese female, nineteen years of age, who was born without a *tongue*. (*A very remarkable phenomenon, especially for a woman!*) Almost every part of the body has been found misplaced. Some have had both extremities united in one stump. I have a drawing in my museum which represents a case, attended by a physician in this city, where the head is remarkably large, and *all the organs of the body are placed on the reverse side*.

When I attended lectures in the old Barclay-street university, a human monster was produced, which had two perfect heads on one body. There is an account, in the American museum of this city, with the figure attached, in which two females are united, and the account states that they lived many years.

Since writing the above, I have visited the museum, and copied the following singular fact, and at

the same time took a drawing. The following paper was found, and is now pasted in the inside of an old trunk brought from Ireland, and presented to the American museum of this city, by Edward Windhurst, December, 1836 :—

“Short but concise account of Eliza and Mary Skulkhurst, who were born joined together by the hips and shoulders, A. D. 1100, at Biddendin, in the county of Kent ; commonly called the Biddendin maid.”

The reader will observe by the plate given of them, that they lived together in the above-joined state thirty-four years ; at the expiration of which time one of them was taken ill, and in a short time died. The surviving one was advised to be separated from the body of her deceased sister by dissection ; but she absolutely refused, saying these words : “As we came together, we will also go together.” And in the space of about six hours after her sister’s decease, she was taken ill and died also.

By their will is conveyed to the church-wardens of the parish of Biddendin, and their successors for ever, a certain piece or parcel containing twenty acres, more or less, which now lets for thirty-one pounds ten shillings per annum.

There are usually made for these wonderful phenomena of nature about one thousand rolls of bread, with their impressions printed on them, and given away to all strangers on Easter Sunday, after Divine service in the afternoon ; also about three hundred quartern loaves, and cheese in proportion, to all the poor inhabitants of said parish.

One of the most interesting of this class of births occurred on the 26th of October, 1701, at Szony, in Hungary. They were two sisters joined, and were baptized Helen and Judith. The body of Helen was first excluded as far as the umbilicus ; three hours after, the feet were expelled, together with the body of Judith, connected to that of Helen. Although they were united at the back below the loins, yet they were turned with their faces and bodies half sidewise to each other. One anus, situated between the right femur of Helen and the left of Judith, was common to both. *Unam quoque habebant vulvam, intra 4 pedes reconditam, ut dum erectis starent corporibus, ne vestigium ejus conspicuum esset.* The desires to attend to the calls of nature affected them separately. In her sixth year, Judith was seized with palsy of the right side, and continued to suffer from its effects for the remainder of life ; but Helen, on the contrary, became more active, lively, and beautiful. A difference was also observable in their vital, animal, and natural functions, in health as well as in disease ; and although they had the small-pox and measles at the same time, yet they had other disorders separately. Judith was often convulsed, while Helen remained free from indisposition. Helen had a pleuritic affection. Judith had a fever. One of them had a catarrh and a colic, while the other continued well. At the age of sixteen the catamenia appeared and continued, but not at the same time, or in the same manner, or in equal quantity. Sometimes the one, sometimes the other, would be more disordered on such occasions ; but Judith was more frequently convulsed, and was subject to various hysterical and pectoral affections. In their intellectual powers there was a striking difference : Helen was very engaging in her manners ; they both, besides their vernacular tongue, could speak German, French, and English ; they could read, write, and sing, very prettily. While the one was asleep, the other was often awake.

On the 5th of February, 1723, in the twenty-second year of their age, Judith was seized with violent convulsions, succeeded by coma, which terminated fatally on the 23d of February. During this time Helen was affected with fever, accompanied by frequent faintings, whereby she was so much debilitated, that, although she was still sensible, and could speak, she fell into extreme suffering, three minutes before Judith ; and after a short struggle, they both expired almost at the same instant.

On dissection, each was found to be provided with distinct viscera, though they had but one anus in common ; and their sacra, aortæ, and venæ cava, were connected. The viscera of Helen were all healthy ; but the heart of Judith was much enlarged, and enclosed in a very strong pericardium ; the right lobe of the lungs was in a putrid state. The spines of each were distinct to the second portion of the sacrum, where they became united. The aorta from each formed a common trunk upon the sacrum, and afterward divided into common iliacs. In like manner the common iliac veins formed upon the sacrum a common trunk, which afterward divided into a vena cava for each body.

PLATE D.



Fig. 1. Biddenden Maid.

Fig. 2. Monster, resembling a Mermaid, reputed to have been born in Ravenna, Italy.

Fig. 3. Siamese Twins.

Fig. 4. Monster, part man and part beast, reputed to have been born in 1603, of a woman who had intercourse with a dog.

Fig. 5. Monster stated in Aristotle to have been born in Ailes. Proven in France, 1597, could walk on his back and on all fours.

Fig. 6. Monster stated by a writer to have been born at Navarre, in 1530, with four arms and legs.

Fig. 7. Monster stated to have been born in the reign of Henry III. with two heads and four arms, and the bodies joined at the back.

Fig. 8. Mother's Mark—*Nanus Materna*.

A case is related, where a separation was successfully accomplished in two female fœtuses united by the ensiform cartilages, the union extending to the umbilicus. In the "Journal de Verdun" for 1709, there is a case resembling the Hungarian sisters; the age to which the ladies lived is not mentioned, but it is stated that they had acquired a knowledge of several languages. In the "London Philosophical Transactions" is related a case with one body, two heads, four hands and arms, three legs, one navel, one anus and two sets of female genital organs. While one head was awake, the other slept; or the one was quiet while the other would cry. They both died at the same instant. Dr. Berry relates the particulars of two female children united by their sterna. Medicine given to either affected both; one would wake while the other slept, but both generally slept at the same time; and, what is more remarkable, one was entirely nourished, for some months after birth, by what was received into the stomach of the other.

The case of the Siamese twins presents a most extraordinary instance of *lusus naturæ*, being a living double child. The name of one is Chang, and the other Eng. They were born in the kingdom of Siam, between the Siamese and Burmese empires.

Many of the houses in this country are built of bamboo upon rafts, and anchored in the rivers. The palace of the king is enclosed within walls about two miles in circumference. His household consists of about three thousand individuals, of whom seven hundred are his wives.

Chang and Eng are natives of a small village on the seacoast of Siam, about sixty miles from the capital. They were born in May, 1811, of Chinese parents. A native midwife assisted at the birth, which is said to have been easy, notwithstanding their union. They are united together by a fleshy band about three and a half inches in length, and eight in circumference, formed at the extremity of the breast-bone of each, and extending downward to the abdomen. The upper part of the band is a strong cartilaginous substance; the lower part is soft and fleshy. There is but one navel between them. Although there is a great union of sympathy between them, it is very evident that they are two distinct human beings. Their mother observed that she suffered no greater inconvenience at their birth than at those of her former children, as they were very small, and the head of one was presented between the legs of the other.

Their resemblance to each other was not remarkable. With the exception of the spine of Chang, which had a lateral curvature, all their parts were well formed. Chang's left eye was weaker than the right; but this was reversed in the case of Eng: so that each would see best with the eye nearest his brother. Asparagus given in the food of either, separately, did not communicate any odor to the urine of the brother who did not partake of it: which shows that the vascular communication between them is not extensive. On the 9th of December, 1829, both had bronchitis, and the pulse of each beat ninety. They both had measles; and, at eight years of age, the confluent small-pox. They take their meals together, but neither will eat or drink what the other dislikes, though they occasionally take different kinds of food. When the appetite of the one is satiated, that of the other is also. They always fall asleep at the same moment, and it is impossible to wake one without also arousing the other. When asleep, if the one be touched, the other invariably answers; when restless, and they desire to vary their position, the one must roll entirely over the other; and they have frequently been observed to do this without waking or being disturbed by the change.

They appear to suffer no inconvenience from their union. They are contented, and will not consent to any separation. They are quite intelligent and witty. Their parents were of the poorer class, and were engaged in fishing, making cocoa-nut oil, keeping poultry, &c., to support their family. A visiter once asked them "what was their occupation in their own country?" One of them wittily replied that "they were merchants, having been engaged in the duck and egg trade!"

The twins left Siam the 1st of April, 1829, under the protection of Captain Coffin, and arrived in this country, where they were exhibited, and visited by thousands. They then left for Europe, where it was supposed they were visited by about three hundred thousand individuals.

Within a few years, they have returned and located in one of the southern states (North Carolina), and, what is very extraordinary, been married to two sisters.

Aristotle, a very old writer, has the following curious accounts of monsters :—

“ By the ancients, monsters are ascribed to depraved conceptions, and are designated to be excursions of nature, which are vicious one of these four ways : either in figure, magnitude, situation, or number.

“ In figure, when a man bears the character of a beast, as did the beast in Saxony ; in magnitude, when one part doth not equalize with another—as when one part is too big or too little.

“ I proceed to explain the cause of their generation, which is either Divine or natural. The Divine cause proceeds from God’s permissive will suffering parents to bring forth abomination for their filthy and corrupt affections, which are let loose unto wickedness, like brute beasts that have no understanding. Wherefore it was enacted among the ancient Romans, that those who were in any way deformed should not be admitted into religious houses. And St. Jerome was grieved, in his time, to see the deformed and lame offering up spiritual sacrifices to God in religious houses. And Keckerman, by way of inference, excludeth all that are ill-shaped from this presbyterian function in the church. And that which is of more force than all, God himself commanded Moses not to receive such to offer sacrifice among his people, and he renders the reason, Lev. xxii. 28 : ‘ Lest he pollute my sanctuaries.’ Because the outward deformity of the body is often a sign of the pollutions of the heart, as a curse laid upon the child for the incontinency of the parents. Yet it is not always so. Let us, therefore, duly examine, and search out the natural cause of their generation, which (according to the ancients, who have dived into the secrets of nature) is either in the matter or in the agent—in the seed or in the womb.

“ The matter may be in default two ways—by defect or by excess : by defect, when the child hath but one arm ; by excess, when it hath three hands or two heads. Some monsters are begot by a woman’s unnatural lying with beasts : as in the year 1603, there was a monster begotten by a woman’s generating with a dog ; which monster, from the navel upward, had the perfect resemblance of its mother, but from its navel downward it resembled a dog.

“ The agent, or womb, may be in fault three ways : first, the formative faculty, which may be too strong or too weak, by which is procured a depraved figure ; secondly, in the instrument, or place of conception, the evil conformation or disposition whereof will cause a monstrous birth ; thirdly, in the imaginative power at the time of conception, which is of such force, that it stamps the character of the thing imagined on the child. So that the children of an adulteress may be like her own husband, though begot by another man, which is caused through the force of imagination that the woman hath of her own husband in the act of coition. And I have heard of a woman, who, at the time of conception, beholding the picture of a blackamoor, conceived and brought forth an Ethiopian. I will not trouble you with more human testimonies, but conclude with a stronger warrant. We read (Gen. xxx. 31) how Jacob, having agreed with Laban to have all the spotted sheep for keeping his flock, to augment his wages, took hazel-rods and peeled white streaks on them, and laid them before the sheep when they came to drink, which, coupling together there while they beheld the rods, conceived and brought forth young.

“ Another monster, representing a hairy child : It was all covered with hair like a beast. That which rendered it more frightful was, that its navel was in the place where the nose should stand, and its eyes placed where the mouth should have been ; and its mouth was in the chin. It was of the male kind, and was born in France, in the year 1597, at a town called Arles, in Provence, and lived a few days, frightening all that beheld it. It was looked upon as a forerunner of those desolations which soon after happened in that kingdom, where men toward each other were more like beasts than human creatures :

“ Where children thus are born with hairy coats,
Heaven’s wrath unto the kingdom it denotes !

“ Likewise, in the reign of Henry III. of France, there was a woman delivered of a child having two heads and four arms, and the bodies were joined at the back side. The heads were so placed that they looked contrary ways ; each had two distinct arms and hands ; they would both laugh, both speak, and both cry, and be hungry, together ; sometimes the one would speak, and the other would keep silence, and sometimes both speak together. It lived several years, but one outlived the other three years, car-

rying the dead one (for there was no parting them) till it fainted with the burden, and more with the stench of the dead carcass.

“The imagination also works on the child after conception, for which we have a pregnant instance : A worthy gentlewoman in Suffolk, England, who being with child, and passing by a butcher killing his meat, a drop of blood sprung on her face ; whereupon she said her child would have a blemish on its face ; and, at the birth, it was found marked with a red spot.

“It is certain that monstrous births often happen by means of undue copulation : for some there are, who, having been long absent from one another, and having an eager desire for enjoyment, consider not, as they ought, to do as their circumstances require. And if it happen that they come together when the woman’s menses are flowing, and notwithstanding proceed to the act of copulation, which is both unclean and unnatural, the issue of such copulation does often prove monstrous, as a just punishment for doing what nature forbids ; and, therefore, though men should be ever so eager for it, yet women, knowing their own conditions, should at such times refuse their company. And though such copulations do not always produce monstrous births, yet the children then begotten are generally heavy, dull, and sluggish, and defective in their understandings, wanting the vivacity and liveliness with which children got in proper seasons are endowed.

“It remains now that I make some inquiry whether those that are born monsters have reasonable souls, and are capable of resurrection. And here both divines and physicians are generally of opinion that those who, according to the order of generation deduced from our first parents, proceed by natural means from either sex, though their outward shape may be deformed and monstrous, have notwithstanding a reasonable soul, and consequently their bodies are capable of a resurrection, as other men’s and women’s are : but those monsters that are not begotten by men, but are the product of women’s unnatural lusts in copulating with other creatures, shall perish as the brute beasts by whom they were begotten, not having a reasonable soul, or any breath of the Almighty infused into them ; and such can never be capable of a resurrection. And the same is also true of imperfect and abortive births.

“Some are of opinion that monsters may be engendered by some infernal spirit. Of this mind was Agidus Facius, speaking of a deformed monster born at Cracovis ; and Hironamus Gardanus wrote of a maid who was got with child of a devil, she thinking it had been a fair young man. The like also is recorded by Vicentius, of the prophet Merlin, that he was begotten by an evil spirit. But what a repugnance would it be, both to religion and nature, if the devils could beget men ! when we are taught to believe that not any was ever begotten without human seed, except the Son of God. The devil, then, being a spirit, and having no corporeal substance, has therefore no seed of generation. To say that he can use the act of generation effectually, is to affirm that he can make something of nothing, and consequently to affirm the devil to be God, for creation belongs to God only. Again, if the devil could assume to himself a human body, and enliven the faculties of it, and cause it to generate, as some affirm he can, yet this body must bear the image of the devil. Again, it borders upon blasphemy to think that God should so far give leave to the devil, as out of God’s image to raise his own diabolical offspring. In the school of Nature we are taught the contrary, viz., that like begets like : therefore of a devil can not man be born. Yet it is not denied but that devils, transforming themselves into human shapes, may abuse both men and women, and with wicked people use carnal copulation ; but, that any such unnatural conjunction can bring forth a human creature, is contrary to nature and religion.”

As it regards the origin of monsters, there has been, and now is, an almost endless variety of opinions : some regarding them as the produce of the imagination of the mother ; others that they arise from unnatural intercourse between the human female and some of the lower order of animals—as the dog, the monkey, &c.

But the evidence is very slight on which either of these hypotheses rests. That the powers of the imagination are very great, is freely admitted, and that some females have submitted to intercourse with brutes, is readily granted ; but neither of these facts proves that monsters are the result. Indeed we have no sufficiently accurate experiments to demonstrate that pregnancy would result from such intercourse

and yet, on the other hand, it is stated, from good authority, that a woman in the northern part of Vermont, many years ago, who had intercourse with a dog, was delivered of a litter of puppies!

M. G. H. Hilau, in his investigations on this subject, relates many instances in which malformations could be clearly traced to a variety of injuries, as blows in the abdomen, corsets too firmly laced round the body, and to severe mental agitation, produced by unpleasant sights and other similar causes.

Almost every variety of monster may be referred to some morbid change; yea, almost every one of them retains traces of the affection from which it has derived its origin. All twin monsters are the production, in *one germinal membrane*, of *two embryos*, which have afterward grown together. This affords the best explanation of the greater part of double monsters. M. Brano, an artist in this city, has a very extraordinary preparation, which represents a perfect foetus growing out of the abdomen, taken from a man in the East Indies, which appears to be well authenticated. I intend to add this to my collection, for the benefit of the curious.

That monsters are produced from comparatively slight natural causes, is evident from the fact that we can *produce them at pleasure in chickens*, only by a slight increase of the heat of the eggs applied during incubation. It is very remarkable that we never meet with two subjects joined by *different parts*: for example, we never see the union of the *abdomen* of one foetus to the *extremities* of another; of the *belly* to the *back*; or of the *head* to the *sides of the trunk*—showing clearly that there is uniformity and order even in unnatural productions, as well as disease.

SECTION VIII.

HERMAPHRODITES.

By this term we understand *a union of the sexes in one person*. But it is a question among anatomists whether such a production ever really occurs. There are, however, a great many cases of malformation of the generative organs, which very much resemble a union of the two sexes. Sometimes the clitoris of the female is so enormously enlarged, as to resemble very much the male penis; but, after all, it is an *overgrown female clitoris still*. These are very common among the natives at the Cape of Good Hope. If hermaphrodites do not literally occur, there are some cases that so closely resemble them, as to be hard to distinguish.

In the early part of my practice in this city, I was called to examine a case where I found the male and the female organs apparently both tolerably well developed; and I do not know which sex appeared the most perfectly developed, nor can I say that the parts were anything more than a malformation. I have a model of an hermaphrodite in my collection, taken by Brano, which very much resembles the organs of generation of both sexes. The penis is short, the prepuce natural; but the female organs are *not so well developed as the male*, yet they bear a very close resemblance to nature.

Since writing the above, I have seen a wax model of a person in Brussels, Belgium, very much resembling in the genital organs both male and female. The penis is quite natural; the urethra the same as that of a female; but other female parts are deficient. In this case, there was apparently no vagina, and the urine was discharged about one inch below the penis. A gentleman, who saw this model at the same time, thought the organ which so much resembled the penis was only an elongation of the clitoris. The child from whom it was taken was a native of Brussels.

SECTION IX.

NÆVUS MATERNA, OR MOTHERS' MARK.

By this term we understand *a discoloration of the skin at birth*. It occurs in various forms, and in different parts of the body, but it is most usually located on the face or neck. The integument is a little raised, and its surface assumes various colors, as red, purple, black, &c.; these marks also frequently in shape *resemble various objects*, and are not very uncommon, rendering those who have them quite conspicuous. The cause of these marks affords a very curious and interesting subject of inquiry to the philosopher and the physiologist.

I recollect, when I attended lectures in the university of the state of New York, this question afforded a great subject of controversy between two of the most distinguished professors of the college, Hossack and Post: the one contending very zealously that the *nævus materna* were impressed upon the child in consequence of the mother's seeing certain disgusting objects, or by her "longing" for certain things which she could not obtain; while the other maintained with equal warmth that no amount of mental excitement, nor any power of the imagination of the mother, could ever communicate these marks to the child in the womb. And certainly it does appear very improbable and very inexplicable that such marks should be transmitted to the child through such means. All rational theory is certainly against it. But, on the other hand, if we may judge from the most positive and unequivocal testimony of *all mothers wherever it occurs*, we are bound to believe that such is the case. That these marks strikingly resemble certain objects, all can perceive; and when we add to this, that, in every instance where a child has been impressed with a mark of this kind, the mother invariably traces it to some spontaneous and irresistible desire which she felt to indulge her appetite in some kind of food or fruit, the evidence appears conclusive. This fact is so common, as to have become proverbial. Evidence much less than this is quite sufficient in a court of justice to *sentence a culprit to capital punishment*. Shall it go for nothing in philosophy? As Pope says—

"From God above, from men below,
What can we reason, but from what we know?"

Volumes might be cited in evidence on this subject, but I will only insert three or four cases, which have occurred within my own knowledge:—

In my own case, I was born with a mark of this kind, on the integument over the shoulder, resembling a raisin. The explanation of the case is this: During the pregnancy of my mother, a pedlar exposed some fine raisins for sale; at the time, no disposition on the part of my mother was felt to purchase or eat them. Subsequently, however, she experienced very great anxiety for them. My father went in pursuit of the pedlar, but could not overtake him. At birth, the above mark, resembling a raisin, was discovered, and has remained ever since; and, as is said always to be the case, I am very fond of that fruit.

Another case I may relate, of a lady who resides within a short distance of my office. This is a very striking case. The greater part of one side of the face is a little raised, and is of a purple color. This case was so very conspicuous, as to induce me to inquire respecting it: when I found that she accounted for it by a peculiar longing which her mother experienced. I obtained permission to take a model of it, which I have in wax in my museum.

In another case, of an extraordinary character, which came to my knowledge very recently, the marks extended over the face and forehead of a woman, and even under the hair. She accidentally came into my office, and I took this occasion to inquire if she could explain the cause of the mark: but she gave me an evasive answer. I subsequently found, however, that she was embarrassed, in consequence of several others being in the office at the time. She afterward, in a private interview, stated to me that,

during the period of gestation, while some of the family were cutting up the meat of an animal just slaughtered, her mother felt a very strong desire to eat some of it. Accordingly, it was placed on the fire a few minutes, when a stranger entered the room: she grasped up the meat, and held it in her apron, and leaned her head on her hand upon the table, with the fingers in her hair, precisely as it is marked; and the mark over the whole face of the daughter exactly resembles a piece of raw meat. Dr. King was in my office at the time, and witnessed the mark. He has since written to me on the subject.*

Since writing the above, I have seen a case more singular than any others which I have ever witnessed. Passing down one of our streets within a few days, I noticed a peculiar mark on the face of a child in company with its mother. I was at the time in a stage, which I immediately left, in pursuit of the woman, to obtain a history of the case. The lady (Mrs. Murphy) very readily complied with my

May 13, 1846.

"W. BEACH, M. D. — HONORED SIR: In reply to your inquiry concerning what are usually known as "mothers' mark," I would say that notwithstanding the prejudices or sneers of 'would-be oracles of wisdom' in medical matters, I am firmly convinced that there is truth in it, and that not from theoretical *guessing*, but from practical investigation. I have witnessed many instances of the 'marking of children'—enough to prove satisfactorily its existence—and some of the most remarkable I will relate:—

"1. My own brother has a mark on his shoulder, which can only be seen during the season of watermelons, and which closely resembles the red meat and black seed of that fruit—occasioned, as my mother is well aware, by a longing for watermelons, and during which time she recollects perfectly well having scratched or rubbed her own shoulder. The same brother had a pendulous tumor cut from his right nostril when only three days old, by Dr. Minor, of New York city, and which it was almost impossible to detect from a piece of pork: this was occasioned by a disappointment in not getting, at the dinner-table, a favorite slice of pork, which so affected my mother, that she retired to her bedroom, to give vent to her tears, and 'to snuff!'

"2. Mr. Asa Wood, of New Bedford, Massachusetts, can probably eat more clams than any other man living, and is extremely fond of them. When only three or four days old, he ate two dozen cooked clams, without the least detriment to his health—but which was followed by a cessation of crying, which had been almost continuous from the time of his birth. His mother during her pregnancy had a very great longing for clams.

"3. A Mrs. Harris, of New York, was chased by a large baboon during her pregnancy. When her son James was born, he very much resembled that animal in features, and, as he approached manhood, evinced much of its sagacity and cunning. He was very deaf, and articulated with difficulty.

"4. You may probably recollect the lady whom I saw at your office, Mrs. Mary Cosgrove, then residing at 39 Forsyth street, who had a dark reddish mark extending from the right eye upward to the centre of the head. Upon questioning her, she at first was very reluctant to say anything about it, but finding that it was from other motives than mere idle curiosity that these inquiries were made, she cheerfully gave its history. Her mother, during pregnancy, wished to obtain a particular piece of beef which was in the house, and wished to be secret about it, and have no one as witness to it—or, as Mrs. C. expressed it, 'My mother longed for a particular piece of beef, and wanted no one else to see it taken; and then she passed her hand from her eye to the top of her head, rubbing the head with her fingers—studying how to get it' (the beef).

"I could relate a number of other instances as remarkable as the above, and which strongly prove the influence of the brain and nervous system of the mother upon the formation, character, &c., of the fetus in utero, but presume the above will be sufficient.

"I have cured several cases of prolapsus uteri, and one of retroversion, by giving the 'restorative cordial' internally, astringent vaginal injections, and by having the female raised two or three times a day as follows: have the patient lie on her back, wrap the dress around the extremities, and have the feet apart from one foot to one foot and a half; then raise her slowly upward by the feet until the whole body is raised from the floor or bed, so that she rests entirely upon the upper portion of the shoulders and neck; then, still holding by the feet give a slight tremulous motion from right to left, and upward and downward; continue this for a few minutes, and then gradually replace her on her back, with the hips and extremities raised a little. This is a most easy and satisfactory method of replacing the uterus, and one which requires no pessary or other instrument as an auxiliary aid. I became acquainted with it from an old lady, a midwife, who has had an extensive and successful practice of nearly fifty years. She informed me that, in cases of impacted head, she had performed the above operation during the intervals between labor-pain, and invariably produced the desired result. She also informed me that for the last twenty-five years she has not had a case of prolapsus to succeed delivery, which she attributes to the fact that, invariably after delivery, she introduces one or two fingers, and returns the uterus to its natural position as nearly as possible. I mention these facts, as they may prove serviceable at some future time, and open a way to a more perfect and natural method of treatment in the diseases of females.

"This lady has delivered three thousand two hundred different women, and with remarkable success. In any hæmorrhage after delivery, she severely censures the use of cold water, &c. Her method is, to push the uterus up as high as possible, then bring the mouth of the womb to the left side, pressing the lips together against the bone, while the left hand is applied over the bowels, and pushes the fundus to the right side. After holding the mouth thus for a minute, a clot forms; in a short time, remove this clot if necessary, or as soon as pain comes on.

"She was formerly much in the habit of giving ergot in those cases where the pains died away, or were lingering, and of no account; but she says that for a number of years past she has not used a particle of it, as she succeeds as well, and even better, by applying, from time to time, on the mons veneris, vulva, perineum, &c., cloths wet with water and spirits as warm as can be borne; this, she tells me, soon brings on heat, perspiration, and active pains. She has had only four or five placental presentations, and she succeeded in each case by loosening the placenta and pushing it to one side of the uterus; and in each case the child and all came away together. In difficult cases, where turning is required, or in replacing the uterus in prolapsus, &c., she says that the operations can be performed much more easily by having the patient lie as much as she can on her face, instead of the side or back.

"One thing, entirely novel to me, I must mention, and that is, whenever a mothers' mark becomes inflamed, or produces inflammation, by rubbing it several times with the article longed for, it will certainly, says this old lady, remove the inflammation.

"I mention these particulars, so that if you can derive any information of importance for the readers of your work on midwifery, you may use it

"Your friend, respectfully,

request. She stated to me that, a short time before her accouchement, she was in a store, and there saw a gentleman who had upon his cheek *precisely the same mark as the child*. On her return home, she stated that such was the impression made upon her mind, that she knew that her child would be marked in a similar manner, which proved to be the case. This mark consisted of a slight elevation of the cuticle or skin, over the left molar bone of the face, extending nearly to the ear; the color was a deep brown, with two or three *scaly herpetic eruptions* in different parts of the mark. But the most striking peculiarity of the case consists in the growth of large black hair from every part of it, resembling in size and color ordinary whiskers, and were perfectly similar to those of the mark upon the person; which the mother is convinced were by this means communicated to her offspring before birth.

The following incredible, though well-authenticated case, was handed me by my friend Samuel Peet, of Bridgeport, Connecticut. - The account is extracted from a London paper:—

“THE ‘NAPOLEON’ CHILD.—On Friday, August 8, we paid a visit to the ‘Bazar,’ in Oxford street, to witness this extraordinary sport of nature. The child is an engaging little girl, about three years old. The color of her eye is pale blue, and on the iris or circle round their pupils the inscription on —

Left eye,
NAPOLEON
EMPEREUR

Right eye,
EMPEREUR
NAPOLEON

may be traced in the above-sized letters, although all the letters are not equally visible, the commencement ‘NAP’ and ‘EMP’ being the most distinct. The color of the letters is almost white, and at first sight of the child appear like *rays*, which make the eye appear vivacious and sparkling. The accuracy of the inspections is much assisted by the stillness of the eye, on its being directed upward, as to an object on the ceiling of the room, &c.; and, with this aid, the several letters may be traced with the naked eye.

“This effect is accounted for by the child’s mother earnestly looking at a franc-piece of Napoleon’s which was given to her by her brother, previous to a long absence; and this operating during her pregnancy, has produced the appearance in question. It was visible at the child’s birth, and has increased with her growth.”

A most remarkable case of mothers’ mark has recently been related to me, as having occurred many years since in Cheshire county, New Hampshire. A lady during gestation experienced a strong desire for eating sausages, which could not be readily procured. Thus disappointed in satisfying the cravings of her appetite, she gave birth to a female child, marked in a wonderful manner: one arm, from the elbow to the wrist, bore the perfect resemblance of a sausage in shape and color; it was formed of a soft, pulpy mass, apparently devoid of bones or sinews; and on receiving the slightest wound, it was difficult to check the flow of blood. In place of the hand, there were two unsightly stumps representing the thumb and fore-finger, the others being entirely wanting. The subject was of a weakly constitution, and died in her sixteenth year.

CHAPTER V.

INFANTICIDE.

SECTION I.

HISTORY OF INFANTICIDE.

By this term is to be understood, simply, the murder of the newborn infant; but so nearly allied to the subject is fœticide, or the destruction of the fœtus in utero, that they have usually been discussed under one head. Whether we consider the helplessness or the innocence of those who are its victims, there is certainly no crime which can appear more unfeeling to a humane mind, or more calculated to call forth all the finer sympathies of our nature, than infanticide. Nothing, therefore, short of the desire to preserve in society the reputation of chastity, which constitutes the highest ornament of the sex, and which has often proved dearer to them than life itself, could be imagined to impel them to an act so unprovoked and so unnatural as the murder of that inoffensive being, whose existence, under other circumstances, they would willingly sacrifice their own to protect. The accused, however, until her guilt is clearly proved, should rather excite our compassion than aversion; for she stands in a situation in which no other criminal does. The very circumstance of her being known as the mother of an illegitimate child, gives rise to suspicions which excite the tide of public opinion against her, whereby the case is prejudged.

Though there is much reason to believe that this crime is still too familiar to the public, yet, from some of the causes which may lead to the death of an infant, either during parturition or after it, not being studied with that attention which their importance deserves, it is to be apprehended that cases of groundless accusation are not unfrequent. The married, as well as the single, may be the authors of this crime, to conceal their guilt and infidelity from an absent husband. An example lately occurred in England where the object was to obtain thirty shillings of burial-money for the dead child.

If the *history of fœticide* be glanced at, we find that few nations of antiquity were exempt from it. The Mosaic code is silent on the subject, from which we may infer that the Jews were strangers to it, at least during the existence of their great legislator. They may have been deterred from it, on the one hand, by the severe punishments which were denounced against those who should be guilty of murder; while, on the other, they had been afforded the most cheering inducements to avoid the commission of it, by having been forewarned that the Messiah should one day be numbered among their descendants. They did not long continue, however, to be an exception to other nations; for, as their intimacy with the Canaanites increased, they imbibed their habits, and polluted themselves with their worst crimes. These crimes were carried to a dreadful extent by the Canaanites, who immolated their sons and daughters to their gods.

The Egyptians, desirous to prevent the increase of the Jewish male population, lest they should ultimately become their rulers, enacted the most cruel laws to effect this object, but toward their own offspring they conducted themselves with greater humanity. Strabo, in particular, eulogizes them as an honorable exception to those nations who assumed the power of disposing of the lives of their infants.

If we except Thebes, the unfeeling conduct of the Canaanites was more or less prevalent over the whole of the ancient world. The Carthaginians, who had a law by which four infants of noble family

were regularly immolated upon the altars of Saturn, attributed their defeat by Agathocles, king of Sicily, to an omission of these sacrifices ; and, in order to atone for their past neglect, they offered up at one time two hundred of the sons of their nobility !

The Spartan *was enjoined* by the law to toss his weak or deformed children into the caverns of Mount Taygetus ; with him physical vigor was virtue—all that was worth living for. The Athenian writers make frequent allusion to the practice of infanticide : it was enjoined by Aristotle, and justified by Plato and Solon, probably to palliate a practice they were unable to check. It was reserved for Thebes, however, to set an example of humanity to the people that surrounded her ; for, by her laws, it was strictly forbidden to imitate those countries who were accustomed to expose infants at their birth.

The Roman, too, was absolute master of his children's life and death, and from the time of Romulus to that of Constantine they exercised their right with inexorable severity.

But this crime was not limited to, nor has it ceased with, the ancients. It has, unfortunately, been transmitted to modern nations, some of which, in the present age even, it still continues to disgrace. Among the Chinese, the prevalence of this horrid practice is incredible. It was stated by Mr. Barrow, of England, that in Pekin alone the number of children exposed was about nine thousand annually. The Hindoos were equally addicted to it ; but, of late years, by the efforts of some of the British officers, it has been completely abolished in many of the provinces. In Otaheite, previous to its conversion to Christianity, the frequency of the crime was such, that it threatened the depopulation of the island. The natives of New South Wales, and a tribe of those of the Cape of Good Hope, termed, by Mr. Barrow, Bosjesmans, are addicted, the former to the procuring of abortion, and the latter to the destruction of their infants, in various ways. To the latter, however, a good example was set by their former masters the Dutch, who are said to have been in the habit of shooting them with as little ceremony as the wild game of the country.

In the present day, the palace of the sultan is not unfrequently stained with the blood of innocent victims. Thornton, in his account of the Turkish empire, informs us that the offspring of the younger princes of the royal family, who are kept in confinement in the palace, for the throne or the bowstring as it may chance, are destroyed as soon as they are born.

By the history of America, it would seem that infanticide was more or less prevalent over the whole of it. The crime does not appear to have been resorted to, in any of those countries, from any ferocity natural to the people, but to appease the supposed wants of their deities, under circumstances of indisposition or misfortune in war ; to save their parents the trouble of providing for their support ; and to celebrate their success in arms, or the coronation of their sovereign. The Mexicans, and other nations, restricted their sacrifices to prisoners taken in battle.

SECTION II.

CRIMINAL ABORTION, OR FÆTICIDE.

ALTHOUGH this crime is generally limited to individuals who have been impregnated illegitimately, yet we are not without a strong apprehension that it is induced by married females for the sake of accommodation. What inferences are we to draw when we meet with sensible individuals in society, whom the strongest representations are insufficient to deter from causes likely to produce it ? It is doubtful whether the extraordinary notions which have been entertained by legal as well as medical professors, both in ancient and modern times, have not tended rather to the encouragement than the suppression of this criminal practice.

Hippocrates supposed that a male foetus was not animated until the thirtieth, while in the female this was protracted until the forty-second day after conception. It was the belief of the stoics that the soul

was not united to the body until the act of respiration, and that the fœtus was inanimate during its residence in utero.

The opinions of the moderns, again, must have been as injurious as they were absurd, by denying the vitality of the embryo until the period of quickening; and this absurd idea is still perpetuated: by the present British law (9 George IV., chapter 31) it is enacted that the use of means to procure abortion before quickening is only a misdemeanor, but after this period it is punishable with death as a felony. These ideas can not be doubted to have had a dangerous tendency, by impressing the ignorant and unprincipled of both sexes with a belief that, as the fœtus was not endowed with life before a certain time, the procuring of abortion, previously to that particular period, could not be viewed as a crime. The fœtus, however, possesses vitality from the moment of conception, although evidences of its animation are not for some time cognizable to our senses: in proof of which, it is no sooner distinctly visible in utero, than the pulsations of the heart can be distinguished; on the seventeenth day from its transference to that cavity, it contains blood; and an embryo has been seen to move its limbs a considerable time before quickening: and it requires no proof or argument to show that it would be morally as felonious to destroy an ovum at the moment of conception, as a fœtus at the full time.

The detection of fœticide, unless the investigation be speedily undertaken after the crime has been committed, is attended with unsurmountable difficulties; for, in twelve hours afterward even, there is little hæmorrhage; and in a shorter period still, no relaxation of the external genitals can be traced. So late as the third day, an unusual dilatation of the os uteri may be distinguished: all this, however, depends on the age of the ovum; but when other proofs can not be obtained, we are unable to determine, during life, whether this condition of the aperture may not have arisen from the transit of a mole, or a small collection of hydatids; the sex may say that the body thrown off was a false conception, a term with which many of them are acquainted and know the import; but if it can not be produced, or good testimony in support of this statement, the inference must be unfavorable to the accused. The proofs of expulsion of the uterine contents after the fifth, or in the later months, present little ambiguity. These symptoms, however, will merely prove that abortion has taken place, but not whether it has been induced criminally or accidentally. We must therefore attempt to discover whether there are signs of violence having been done to the person, or of such drugs having been administered, as are by the vulgar believed to possess the power of producing abortion.

To induce fœticide, the expedients resorted to may be divided into *local* and *general*. Both of these may affect the uterine system either directly or indirectly. A local cause, such, for example, as some mechanical contrivance, may, by a person acquainted with the structure of the parts, be conveyed into the uterus, and the ovum destroyed, without such a mode being succeeded by constitutional derangement; but, more frequently attempts are made to attain the same end in a less scientific manner, and severe general disturbance sooner or later ensues.* The causes which may be included under the second head, as the exhibition of some of the more active agents of the materia medica, invariably exert their primary influence on the system of the parent in general, and the uterus is sympathetically affected. The ultimate *modus operandi* of both sets of causes is to destroy, either from the first, or eventually, the union between the ovum and the organ which contains it, whereby the development of the former is arrested, and the latter is prematurely excited to dislodge its contents.

The local causes will be first considered, and of these two only can be particularized, viz., blows either on the loins or on the anterior part of the abdomen; and the introduction of some contrivance into the uterus, to rupture the membranes, or in some other way irritate that organ. Except where some predisposition to abortion exists, much severe pressure may sometimes be exerted on the abdomen without either exciting the action of the uterus or injuring its contents, in consequence of the plastic structure of the organ, and the uniform support afforded by the contained fluid to its inner surface, as also the additional protection which it receives from the abdominal parietes.

* That which was alluded to in the trial of Angus (in Lancaster, England) for the murder of Miss Burns, was described as a silver tube with a slide, at the end of which was a dart with three points.

"In the summer of 1823," says Dr. Campbell, of Edinburgh, "I was called on by a person whom I afterward ascertained to be a procurer of abortion, and who requested I should take charge of a young female in a state of pregnancy, and that I might have the child myself. I inquired if the infant was dead, and was answered in the negative, but that the necessary steps had been adopted to destroy it. On visiting the woman I found the fœtus alive; she stated that it was illegitimate, and her first. After warning her against what I had heard, she confessed that she had repeatedly suffered herself to be violently struck over the abdomen; to have some strong liquids, as ale and porter, injected into the vagina; and the os uteri scratched with a stocking-wire. She was delivered in due time of a healthy living child. Such freedom can not always be used with impunity, for the fœtus is very generally destroyed; and the like violence frequently also involves the life of the mother.

"Dr. Smith relates the case of a man who was executed at Stafford, England, for the murder of his wife. She was in a state of pregnancy at the time, and he succeeded in causing abortion by elbowing her in bed, rolling over her, &c., which proved fatal to her.

"In April, 1822, I was called to a woman in the last month of pregnancy, who had been struck on the abdomen by her husband. An extensive detachment of the placenta led to the immediate death of the fœtus, and to that of the mother in fifty-one hours afterward."

Sometimes it may be disputed whether the cause assigned may have had any share in producing the abortion; in which case it becomes necessary to determine, in the first place, if the injury has been sufficient of itself to cause it; and, in the second, if the complainer has neglected to adopt those precautions which had been recommended to her to prevent premature expulsion. The following cases from Belloc, of France, may assist a practitioner in his decision:—

A young woman, between the third and fourth month of pregnancy, had received, from a robust man, several kicks, and blows with the fist, the marks of which were evident. Immediately after the accident she was put to bed, was bled, and had various remedies given her by a surgeon. The hæmorrhage, however, continued, with pains in the loins and abdomen, and the following day the ovum was expelled. In his examination, Belloc declared that the accident was the result of the violence inflicted.

In a second instance, a woman gave birth to a dead fœtus of the fourth month, two days after having been struck, in a dispute with her husband. Instead of betaking herself to bed, or at least keeping quiet, she walked a league that day, and on the next a quarter of a league, when she was at last compelled to go to bed. In this case, Belloc decided that it was very possible, had she remained quiet, and called for proper assistance, the abortion might not have taken place.

On the iniquitous practice of introducing instruments into the uterus, little need be said, since it must already be too well known. We shall therefore merely add the history of two cases in which it proved fatal to the fœtus and to the parent:—

At the Durham (England) assizes, in 1781, Margaret Tincler was indicted for the murder of Janet Parkinson, by inserting pieces of wood into her womb. The deceased took to her bed on the 2d of July, and from that period thought she must die, using various expressions to that effect. She expired on the 23d. During her illness she declared that she was with child to a married man, who advised her to place herself under the care of the prisoner, as she was a midwife, and would assist in relieving her of the child, which was then between the fifth and sixth month. Three days previous to the birth of the fœtus, which happened on the 10th of July, the prisoner took the patient around the waist, and shook her in a violent manner five or six different times, and tossed her up and down. The child died instantly after birth, and was proved by surgeons to have been perfect. On examining the uterus, it appeared perforated at two points by wooden skewers: one of the openings was inflamed, the other gangrenous. Additional evidences of injury were also discovered.

In the London "Medico-Chirurgical Review" for April, 1825, is copied the following case from the "Gazette de Santé" for November, 1824: Messrs. Foderé and Ristellhueber having repaired to the house of the deceased, on the 7th of March, 1822, they found the body of Catherine S—— extended on a table, and already exhibiting marks of incipient putrefaction, although death had taken place only

the preceding day, after a short illness. On examination, there was nothing particular observable on the chest. In the abdomen, the peritoneum was inflamed, and some spots of inflammation on the mucous membrane of the stomach and bowels. In the neighborhood of the uterus, there was a sanguineous effusion, with some clots of blood, in the midst of which was found a fœtus of about sixty days' growth, with its umbilical cord. The womb was flattened, red, and inflamed. On more minute examination, it was found to be ruptured, the opening being about the size of a three-franc piece. The internal surface of the uterus was also inflamed. The membranes of the fœtus were found perforated in two places, near the cervix uteri, and opposite the rupture in the parietes of the uterus, through which the fœtus had escaped into the abdomen. Nothing remarkable about the external genitals. The medical commission called before them and examined some witnesses, by which it appeared that a midwife had been closeted with the deceased, a day or two previous to her death, and made use of a syringe with a long ivory pipe, which instrument was produced. Shortly after this interview, the deceased discharged a quantity of black blood from the vagina, and was seized with excruciating pains, which continued till death took place. From these data, the reporters came to the following conclusion, viz.: first, that "the deceased died of a violent inflammation, with rupture of the uterus, followed by expulsion of the fœtus into the abdomen; second, that this inflammation and rupture being rare accidents, and not likely to take place, except as the effect or consequences of a grave malady, in the last stage of utero-gestation, it was probable that they were, in this instance, the result of violence, from the forcible introduction of the pipe of a syringe into the os uteri, and the injection of some acrid and stimulating liquid into the cavity of that organ." The jury found the midwife guilty, and condemned her to ten years' imprisonment.

"*The causes which are thought to act on the general system,*" continues Dr. Campbell, "will now be considered. These are venesection, cathartics, emetics, diuretics, and emmenagogues. The opinion that venesection, when copiously directed, induces abortion, especially if the blood be drawn from the foot, is as ancient as the time of Hippocrates; but the best refutation of such a notion is, that it is a remedy in daily use, and found most efficient in preventing the accident. Profuse evacuations of blood certainly occasion great irritability of system in the gravid state, and may in this way lay the foundation for a predisposition to premature evacuation of the uterine contents. It must also, I presume, be well known to every practical man, that if the uterine derangement amount to a partial dilatation of its aperture, so large a detraction of blood as shall have the effect of producing deliquium, will assuredly be speedily followed by the expulsion of the ovum. Where no tendency to expulsion exists, venesection will not excite it. No doubt, if a woman were brought extremely low by the practice, the system would be incapable of furnishing sufficient materials for the development of the uterus, and the premature expulsion of its contents would be the result. Cases are related, if we are to believe them, where the experiment was very fairly tried, without exerting any influence on the uterus. Mauriceau says that he bled one pregnant woman forty-eight, and another ninety times, for an inflammation of the chest, and that both went on to the full time.* Where, in any instance, the evacuation has been profuse and repeated, without any obvious reason, the conduct of the operator should be investigated.

"*Cathartics* of a drastic nature, especially those which act chiefly on the rectum, and cause much tenesmus, if frequently repeated in females of moderate vigor even, with or without predisposition, may no doubt excite abortion; and occasionally a similar result may succeed the reiterated use of those of a milder description. I have seen two women, who formerly had children, laboring under icterus in the seventh month, unattended by a single acute symptom, for which each of them used a few doses Submur. Hyd. and Pulv. Jalap C. combined, and in both the result was the premature expulsion of the fœtus; and I am disposed to believe that this would not have happened had the vegetable cathartic alone been used. It is well known that active aperients are frequently exhibited during gestation, without, generally speaking, being productive of any unpleasant effect; thus Dr. Rush states that, during the yellow fever of 1793, he administered calomel and jalap, in large and frequently-repeated doses, to females in every

* Capuron Médecine Légale, p. 307. I have great difficulty in believing this; for although the French have bled sufficiently in the field, they are chary of phlebotomy.

stage of pregnancy, and yet in no case were the medicines followed by abortion. When there is any suspicion that they have been administered with an improper view, the object for which they have been ordered, their nature, quantity, and how often they have been repeated, must be ascertained. By the frequent use of aperients, the uterus must imbibe a sympathetic influence from the intestines, whereby its fibres are excited.

"Calomel, if given to such extent as to cause pytalism in a woman at all predisposed to abortion, is sure to be followed by this accident: if the fœtus be strongly contaminated with syphilis, the same thing will happen whether mercury has been exhibited in sufficient quantity to affect the gums or not. But unless there be a predisposition to premature uterine action, this drug may be exhibited to the extent of inducing violent salivation without occasioning any disturbance in the genital system. These remarks will explain the discrepancy which may be observed in the sentiments of professional men, regarding the effects of calomel on females in the gravid state: some contending that it will, and others that it will not, cause the premature evacuation of the uterus. I remember being asked, a few years ago, to visit a young girl, whom I found so violently salivated, with a view to excite abortion, that her tongue could be compared to nothing else than a honeycomb; but, notwithstanding her extreme suffering, she went on to the full time. Through the kindness of Mr. Gibson, of this city (Edinburgh), I had an opportunity of witnessing the following case, in which the violent action of calomel produced abortion: The patient took two pills, each containing about five grains of calomel; the purging and tenesmus which they caused was so severe, as to induce detachment of the placenta, and she lost about four pounds of blood before any one saw her; in four hours after this turning was effected, a dead fœtus extracted, and the patient herself died in less than two hours afterward.

"*Emetics* are dreaded by sensible females in a state of pregnancy, and justly; for although spontaneous vomiting has rarely been known by practitioners to be succeeded by premature evacuation of the uterine contents, yet the same action artificially excited is, by the general concurrence of accoucheurs, very apt to induce uterine action. Velpeau, however, mentions one woman who took fourteen grains of tartar of antimony: severe vomiting ensued, but no abortion.

"When an idea exists that the emetic was exhibited with a corrupt intention, we should ascertain whether it was given in a concealed form or not. The action of vomiting may destroy the ovum, either by the uterine fibres being excited and causing detachment of the placenta, or by the contraction of the abdominal muscles, causing a rupture of the membranes of the ovum.

"*Diuretics* have been said to possess the power of exciting abortion, but daily experience seems to prove the contrary, by this accident not supervening in cases of pregnancy complicated with dropsy, in many of which the fœtus has been retained to the full time, notwithstanding the vigorous use of several active agents of this class. Such medicines have no specific power, but what might be equally derived from the repeated use of strong cathartics. The continued exhibition of digitalis will, I think, poison the fœtus and lead to abortion; but, what is equally to be dreaded, it will also destroy the parent, as may be said to have happened in the following instance:—

"A married female aged twenty-six, fair complexion, relaxed, delicate habit, but not spare, the mother of several children, had ascites in her former confinement, and applied for the same complaint when in the eighth month of this her fourth pregnancy. In the course of twelve days she took six drachms of tincture of digitalis.* On the twelfth day, at two o'clock, A. M., the fœtus, still-born, was thrown off before assistance could be afforded to her; and in twelve and a half hours afterward, the woman herself expired, although she was in the most favorable state when left after her delivery. The child seemed to have been but a very short time dead, for it exhibited no evidences of putrefaction. This medicine

* The particulars of a case which happened some years ago, in Edinburgh, were communicated to me, in which an eminent practitioner ordered in a common mixture, some tincture of digitalis for a middle aged female. She continued its use for some days, but suddenly experienced some unusual symptoms, and in a very few hours thereafter died. A gentleman who had been called in, in the hurry of the moment, declared that the patient had been poisoned with fox-glove. The husband charged the ordinary medical attendant with this grave error; but to convince him that the medicine was not in fault, the prescriber offered to take the same quantity himself, an experiment which, fortunately, was not insisted on by the complainant.

sometimes accumulates in the system, and declares its effects suddenly, as in the foregoing case. The body was examined twenty-five hours after death: it was running rapidly into putrefaction. About three pounds of water were contained in the chest; in the pericardium were found a few ounces of sero-sanguineous fluid; in the abdomen the effusion was very trifling.

"*Cantharides* has been taken in rather large doses, with a view to excite the uterus, but without effect. Mr. Lucas mentions a case, where a woman swallowed about a drachm of this drug; and though it occasioned frequent vomiting, violent spurious pains, tenesmus, and immoderate diuresis, with fever, which reduced her to extreme weakness, yet she went on to the full time. Foderé mentions a woman who swallowed half an ounce of powdered cantharides; in a short time she was seized with labor-pains, and brought forth a living, healthy child, amid excruciating torture, but died herself the next evening. A woman in Edinburgh swallowed a handful of saltpetre, and in half an hour abortion was induced, without injury to herself.

"*Of the class emmenagogue*, some articles may be mentioned as particularly calculated to induce abortion. The powder or an infusion of the leaves *juniperus sabina*, are drugs which have long been used as a secret remedy to produce abortion, and there is little doubt, when exhibited in large doses, it excites violent disturbance in the general system, and consequent abortion. There is reason to believe that both its oil and substance have been given for this iniquitous purpose. In the case of Miss Burns, for whose murder Mr. Angus was tried at Lancaster, in 1808, it was supposed the oil of this medicine had been used. Some years ago, I was called by Mr. Blyth, now a medical officer attached to one of the divisions of royal marines, to assist him in the case of an unmarried woman, who was reputed to possess some secret by which she could excite abortion at pleasure. The foetus was in the commencement of the sixth month, still-born; and I was assured that she had produced several in the same way. It was currently reported that she used Savine powder; and I might probably have known more of her arts, had I not, in the feeling of the moment, forcibly pointed out to her the criminality of what had come to my knowledge—after which I heard no more of her. Of the strong poisonous quality of this drug, it is sufficient to state that, in the experiments which M. Orfila performed with it on two dogs, six grains of it killed the one in sixteen, and four grains the other in thirteen hours.

"It does not always, however, produce abortion; for M. Foderé relates the case of a poor girl, half idiotic, cachectic, and seven months pregnant, who took from the hands of the person who was supposed to be the father of the child, a glass of wine containing some Savine powder. She became so much indisposed after it, that it was deemed expedient to send a report of the transaction to a magistrate, who ordered Foderé to visit her. She informed him that, after having swallowed the drug, she felt a sensation of pungent heat in her bowels, accompanied with hiccough and vomiting, followed by a violent fever, which continued upward of fifteen days. These symptoms were nevertheless relieved by refrigerants, the woman was kept under surveillance, and at the end of two months she was safely delivered of a healthy child.

"Of late years much has been said regarding the power which the *secale cornutum*, ergot, or spurred rye, possesses of acting upon the uterus. Some writers assert that it has no influence whatever on this organ; others, again, say it has, but only when labor is present or impending. I can not, however, agree with either: for, from cases which have happened in my own practice, I maintain that the ergot will excite contractions of the uterus, though labor is not impending, and even though the organ be not pregnant, as I have in more than one instance, in the case of deformed pelves, induced labor by the administration of this drug; and in a case where a woman applied to me, to be relieved of a uterine polypus, the tumor being found, on examination, to be situated so high that it was impossible to reach it, ergot was administered, and after she had taken it four times a day for two days, bearing-down efforts supervened, and the tumor was forced so low that it could be reached with facility. On these grounds, then, there is no reason to doubt that the ergot of rye will induce uterine contractions, without injury to the mother; in some instances, however, it appears to be inert. Its administration is not without danger to the life of the foetus, but it is not yet agreed in what way the ergot exerts its deleterious influence upon it—

whether it acts as a poison, or whether it destroys the infant merely by the violence of the uterine contractions which it causes. I am inclined to adopt the latter view, because the life of the fœtus is destroyed almost solely in those cases where ergot has been administered after rupture of the membranes, and under the same circumstances I have observed fractures of the cranium; and also, that the children born where ergot was given, frequently died shortly after birth, of meningeal inflammation and hydrocephalus, probably caused by pressure.

“*Natural causes*, or those in which no criminal intention can be ascribed to the party concerned, are numerous. All acute diseases, syphilis, the intemperate use of cordials, violent exercise of any kind, the elevating passions, particularly anger, accidental blows on the abdomen, the death of the fœtus, detachment of the placenta, excess in venery, irritation of neighboring organs from constipation, dysentery, hæmorrhoids, diarrhœa, and catarrhus vesicæ, may all, in a habit predisposed, lead to abortion, without any participation on the part of the parent. Dr. Arrowsmith, of Edinburgh, states that when the fœtus is lost from detachment of the placenta, it is owing to hæmorrhage. Many opportunities have enabled me to remark that a detachment of from a third to a fourth of the mass, will shortly afterward be followed by the death of the child; but when the placenta is adherent at any point above the cervix uteri, the bleeding is so trifling, that the death of the fœtus can not be ascribed to it; and, moreover, none of the effusion comes from the fœtal vessels: the loss is altogether maternal. The destruction of the infant, therefore, must arise from the destruction of a function requiring integrity of the placental attachment.

“In conducting these investigations, it is necessary to examine the extruded mass, to ascertain whether it consist of hydatids, a mole, or a fœtus; and, if the latter, its age. It is desirable to learn by what means the expulsion has been accomplished: whether with the consent of the female, or by exhibiting drugs in a concealed form; or whether she has herself been using medicines, and of what nature. When the child is expelled, any wounds, though mere cuticular abrasions, should be carefully noticed. The head must be minutely examined, to determine the presence of pin or needle punctures.

“From the foregoing observations, it is obvious, in the first place, that all our pharmaceutical agents, reputed for exciting abortion, are uncertain in accomplishing this unwarrantable act; and, secondly, that the attempt is very liable to involve the life of the mother—who, indeed, may be the only victim, while the real object of persecution escapes uninjured. M. Foderé mentions the case of a cook, who, finding herself pregnant, and being anxious to conceal her situation, swallowed half an ounce of powdered cantharides, with an ounce of the sulphate of magnesia. Some hours afterward she was seized with severe pains resembling colic, and she produced a living child in the sixth month; but, in the course of the same night, she expired in great agony. These latter points I wish to be urgently impressed on the mind of the medical attendant, lest he may at any time, by powerful incentive, suffer himself to be betrayed into an act so contrary to every moral obligation, and so liable to be succeeded by fatal consequences: for I conceive the accessaries and accomplices in this unprincipled experiment to be as amenable for whatever may befall the parent, as for the destruction of the fœtus. And it has been very properly observed by Dr. Percival, with equal truth and beauty of expression, that ‘to extinguish the first spark of life is a crime of the same nature, both against our Maker and society, as to destroy an infant, a child, or a man: these regular and successive stages of existence being the ordinances of God, and subject alone to the Divine will.’”

SECTION III.

PENAL STATUTES AND FOUNDLING-HOSPITALS.

IN England, in 1803, it was enacted by Lord Ellenborough, that persons administering medicines wilfully, or using any instrument to procure abortion, previous to quickening, as well as their counsellors, aiders, and abettors, shall be declared guilty of felony, and shall be liable to be fined, imprisoned, put on the pillory, privately or publicly whipped, or transported beyond seas for fourteen years. The same act ordains, that administering medicines, &c., with intent to procure abortion after quickening, shall be punishable with death.

Of the whole, the law of Scotland on this head is the most ridiculous: for the learned commentator observes that all procuring of abortion or destruction of future birth, whether quick or not, is excluded from the idea of murder; because, though it be quick, still it is only *pars viscerum matris*, and not a separate being; or, in plain language, if an individual cuts his own throat, we are not to interfere, since he has a right to dispose of himself as he pleases! Child-murder, in almost all civilized countries, is considered a capital crime.

Foundling-hospitals have been established in different countries to receive illegitimate children, with a view to the diminution or prevention of the crime of child-murder, but it may be doubted how far they have answered these highly-commendable intentions. It is very certain that they tend to the demoralization of the community, while facts would seem to prove that they have not remedied the evil, but merely rendered it less conspicuous in the eyes of the public. The existence of these establishments, by concealing the frailties of the sex, and sheltering them from that ignominy and censure inseparable from their situation, has in a great degree removed the most powerful check on illicit intercourse. That foundling-hospitals have not conferred that benefit on humanity which it was expected would flow from them, their own records sufficiently prove: In Paris, in 1790, more than 23,000, and in 1800, about 62,000 children were received; and it is estimated that eleven thirteenths of all the foundlings perish annually, through hunger and neglect. It is mentioned, also, that great numbers of them die from a disease which is styled *endurcissement du tissu cellulaire*, called in English "skin-bound disease," and of rare occurrence in private practice. Sir John Blaquiere, of Ireland, stated to the house of commons that of 19,420 infants admitted into the foundling-hospital of Dublin, during the ten years preceding 1843, 17,440 were dead or unaccounted for. In Moscow, with every possible advantage, of 37,607 admitted in the course of twenty years, only 1,028 were sent out. In London, the results have been more favorable: the number of deaths under twelve months have been fewer than one in six.

Note to page 56.—DISCHARGE OF MATURED OVA, &c. Besides proving that at each period of heat in animals ova are regularly discharged, whether sexual intercourse coincidently takes place or not, Bischoff has added some curious observations, showing that the bursting of the Graafian follicles, and consequent discharge of ova, is entirely independent of sexual orgasm, or of the influence of spermatozoa; thus: coitus may take place, and examination of the ovaries, six, eighteen, or twenty hours afterward, prove that no ovum has escaped, although spermatozoa may have reached the ovaries. Examination immediately after coitus, may detect ova which have advanced two or more inches along the Fallopian tube, to have done which they must have started some considerable time before the act of coition. Bischoff considers it to be immaterial at what part of the Fallopian tube the spermatozoa and ovum come in contact; so that they meet before the ovum has reached the uterus, impregnation is sure to take place. He states that he has clearly traced live spermatozoa up to the ovaries; this statement, and the inference he deduces from it, that fecundation of the ovum may take place at any part of the Fallopian tube, is called in question by M. Pouchet, who has recently offered a table showing hourly the progress and condition of the spermatic fluid in the generative apparatus of the mammiferous female. His experiments were chiefly made on rabbits. From the sixteenth to the twenty-fifth hour after copulation, live spermatozoa were constantly found in the vagina and uterine horns. Even to the twenty-first or twenty-third hour, these animalcules [?] continued very active, but shortly after that, they lost their vivacity, and died toward the twenty-fifth hour; so that nothing but broken-up, tailless spermatozoa could be seen. He was never able to see live spermatozoa reach more than a very short distance up the uterine extremity of the Fallopian tube; and he considers the observations of Bischoff and Wagner, who had found live spermatozoa on the ovaries, to be erroneous. According to his own view, it is in the uterus alone, or probably also at the mouth of the Fallopian tube, that impregnation of the ovum can be effected.

With regard to animals, numerous observations and experiments, especially those by Bischoff and Raciborski, have rendered it quite certain that at every period of heat one or more ova are matured and discharged from the ovary, and this moreover quite independent of sexual intercourse. The statement of these eminent physiologists are founded on the strictest of all evidence, the actual detection of ova in the Fallopian tubes of animals in whom sexual intercourse had not taken place; thus Bischoff found in a lamb, killed a few hours after becoming in rut for the first time (and in whom coition had not been effected), a ruptured Graafian vesicle in the right ovary, and an ovum in the corresponding Fallopian tube. Again, in a bitch two days after becoming in heat, and apparently inclined to admit the male (which it was prevented from doing), Bischoff extirpated the left ovary and Fallopian tube, and closed the wound by suture; no Graafian vesicle in this ovary had burst, but four were extremely torpid. Five days afterward the bitch was killed; four large corpora lutea were found in the right ovary, and four ova in the corresponding Fallopian tube. From this it appears quite certain, as Bischoff concludes, that, during the rut of animals, ova become detached from the ovary and enter the Fallopian tube or uterus, where they perish, unless sexual intercourse coincidently occurs, in which case the ova in all probability become impregnated. The same may be considered to hold good in the human female.



Plate 22.



N. Parny del.

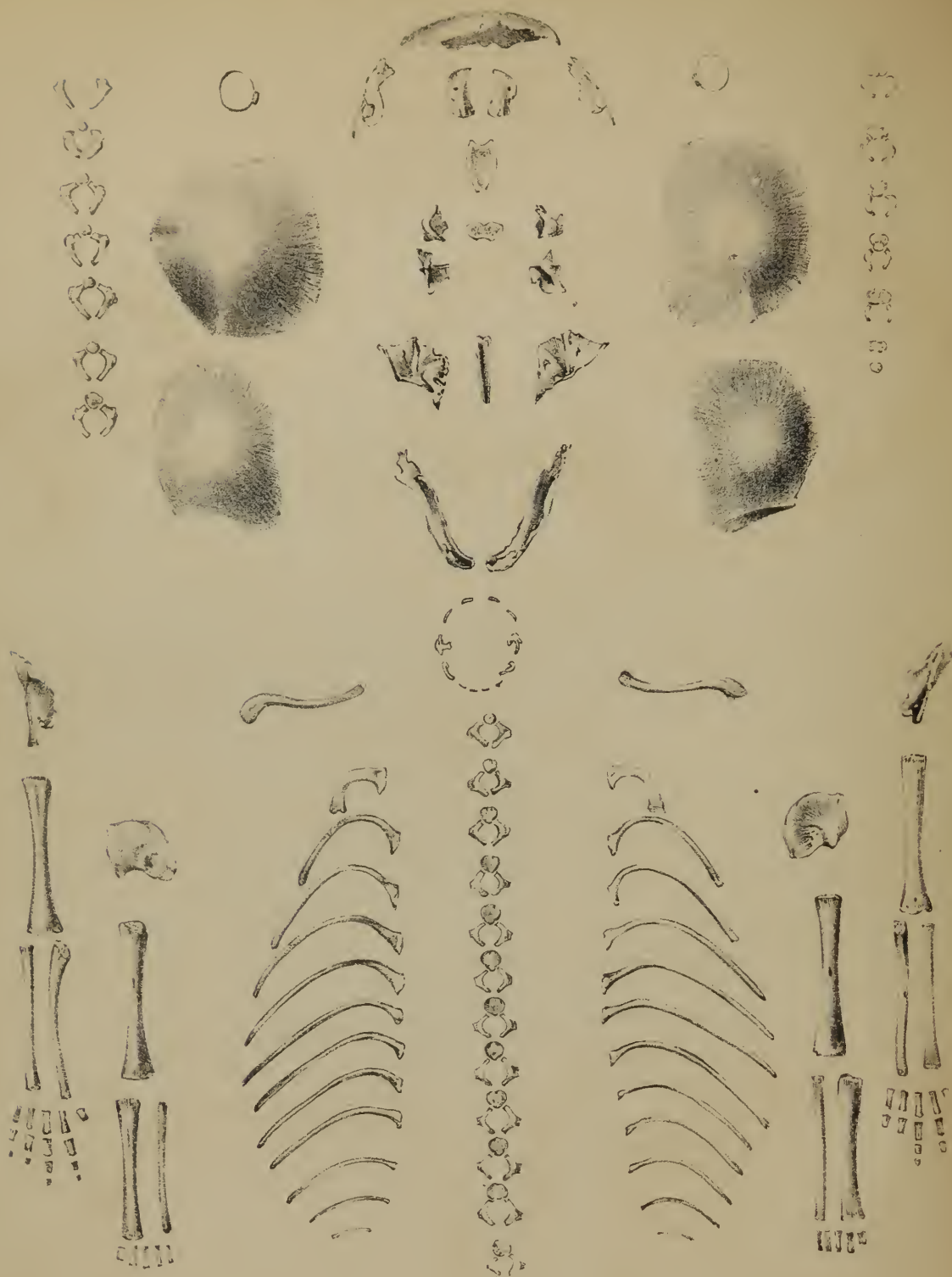


PLATE C.

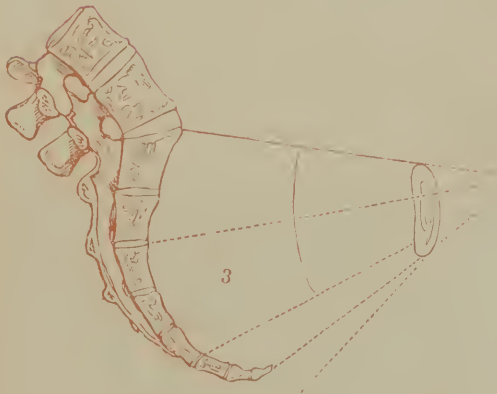
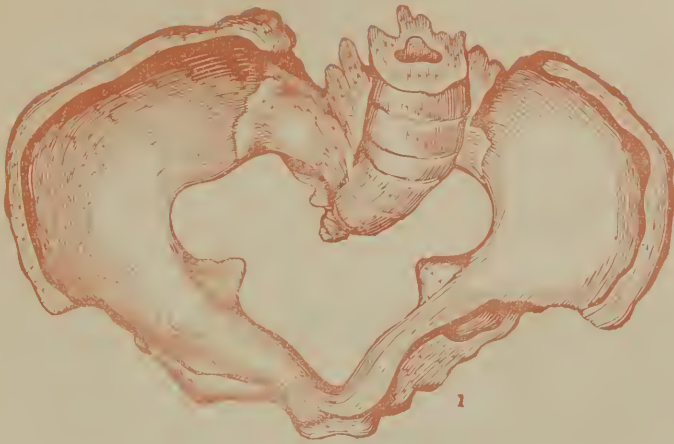
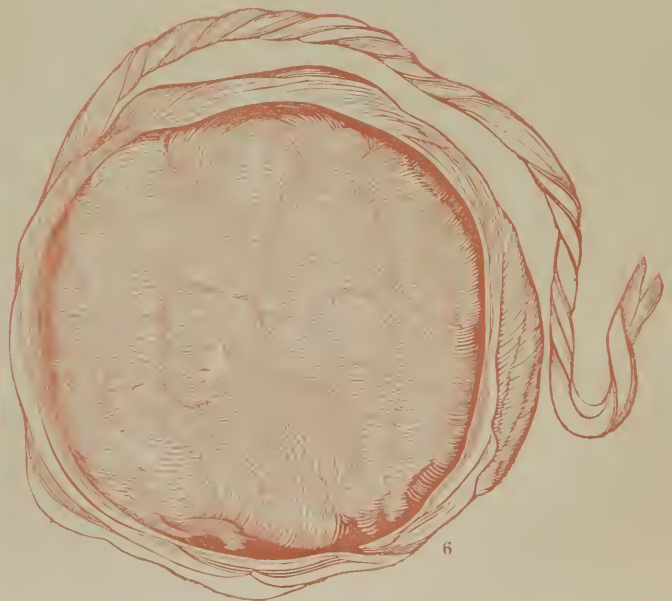
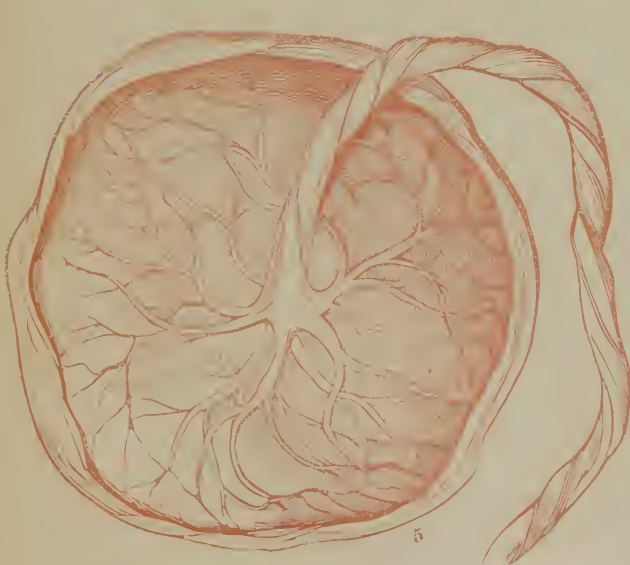


Fig. 1. Deformed Pelvis.
Fig. 2. Section or side view of the lower part of the Pelvis.
Fig. 3. Section and angle of the Pelvis
Fig. 4. Section of the Pelvis, with a view of the Fetus (A) Sacrum (B) Rectum (C) Uterus (D) Bladder (E) Finger in the Vagina.
Fig. 5. Placenta, fetal side.
Fig. 6. Placenta, maternal surface and cord.



PART SECOND.

THE EXPULSION OF THE FŒTUS, OR PRODUCT OF CONCEPTION.

PRELIMINARY REMARKS.

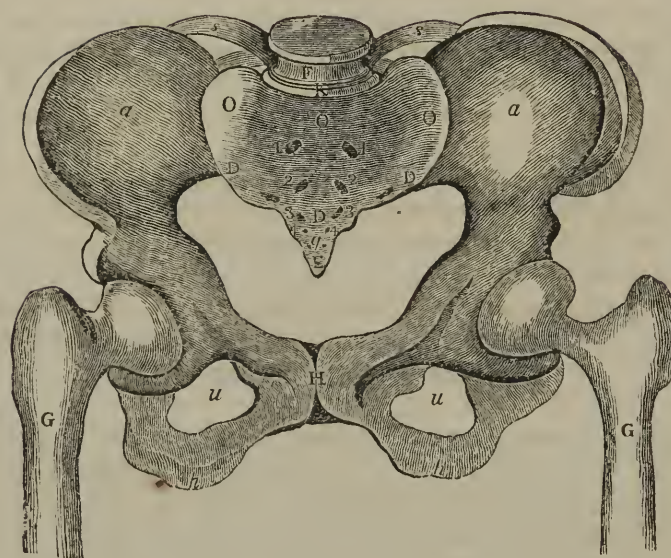
AFTER having remained for a longer or a shorter period in the cavity of the uterus, and there having passed through the whole, or perhaps only a part of the changes necessary to its complete development, the product of conception is expelled from that organ. This expulsion constitutes a function of the female system which is designated by the general name of *parturition*, or *labor*; and is usually performed when the fœtus arrives at maturity. Sometimes, however, it occurs before; and in some few, very rare cases, it is protracted beyond the full period of gestation. When the product of conception is expelled before the sixth month, it is called *abortion*, or *miscarriage*; after the sixth month, and before the ninth, it is called *premature delivery*; if it occur at the full period of gestation, it is called *delivery at term*, or *maturity*; when extended beyond the full period, it is called *tardy delivery*.

Labor at full term being the usual final result of pregnancy—the object which nature always endeavors to accomplish—we shall at once commence its study, and consider its phenomena. Abortion and premature delivery, which are only deviations in the progress and duration of labor, we shall consider hereafter. But, before entering on the immediate consideration of labor, it will be necessary to make ourselves acquainted with the *pelvis*, or *long canal*, through which the fœtus has to pass; and also with the relative diameters of the substance to be propelled through this crooked channel.

Many writers insist very strenuously upon a minute knowledge of the pelvis, both in its healthy and its diseased state; but I think that a good general knowledge of its character, in connexion with every other organ of the system, is quite sufficient to practise this branch of medicine successfully. I have generally found in midwifery, as in anatomy, that those practitioners who have attached an undue value, not only to the anatomical structure of the pelvis, but any other part of the system, have been the most unsuccessful in practice: hence we seldom see a good anatomist a skilful physician. When the student, therefore, acquires a knowledge of the pelvis—and I care not how minute—he must study well the relative function of every other organ connected with obstetrics or general practice: an excellent knowledge of the pelvis and the mechanism of labor can be acquired by the model called the “Manikin,” one of which I have imported from France. This model I exhibited to my class during my course of lectures of last session in the Cincinnati Medical College. It illustrates well the different presentations and exit of the fœtus.

CHAPTER I.

THE PELVIS.



(a a, ossa innominata; u u, foramen ovale; G G, femur, or thigh-bone.)

DEFINITION.—The term pelvis literally signifies *a basin*, and was so called by the ancients, on account of a fancied resemblance to those then in common use.

SITUATION.—The pelvis is situated immediately below the spine, the termination of which forms the posterior and back part of it. It rests on the upper part of the lower extremities, or thigh-bones, three of the bones of which unite to form the socket which receives the head of the femur, viz., the *ilium*, the *ischium*, and the *pubes*.

GENERAL DESCRIPTION.—Its shape at the brim is an irregular oval opening, having a short and a long diameter. The pelvis may be compared to the heart with its apex pointing downward.

BONES OF THE PELVIS.—The pelvis is composed of the two *ossa innominata*, the *sacrum*, and the *coccygis*. The two *ossa innominata* form the anterior, lateral, and by far the largest portion of the pelvis; they are broad and expanded; and during childhood, each of them are separated by cartilages into three portions, the names of which are retained in after-life. They are—

1. The *ilium* (or haunch-bone), which forms the superior and largest portion of the *ossa innominata*; it gives attachment to the large and powerful muscles connected with the lower extremities, and forms the upper portion of the acetabulum, which receives the head of the os femoris, or thigh-bone.

2. The *ischium* (the sitting-bone). It is situated below the *ilium*, forming, with the os pubes, the foramen thyroideum, and, with the *ilium*, forming the inferior and larger portion of the acetabulum.

3. The *pubes* (the share-bone), which forms the superior and anterior division of the *ossa innominata*, and is united with its fellow anteriorly. The space between the articulation in front, and the rami, is called the *arch* of the pubes.

THE SACRUM (*the rump-bone*).—This bone forms the superior and posterior boundary of the pelvis; it is concave internally, and convex externally. Its figure is triangular: on the base of the triangle the last lumbar vertebræ rests, and the os coccygis is articulated to its apex. The projection at the superior and anterior part of the bone is called the *promontory of the sacrum*.

THE OS COCCYGIS (*the knuckle-bone*).—This bone is divided into two, three, four, and sometimes five portions. It forms the extremity of the spine, and is curved forward; it is articulated with the sacrum by an intermediate fibro-cartilaginous structure, admitting some degree of motion, by which the *long diameter of the outlet is considerably increased*.

ARTICULATIONS OF THE PELVIS.—The bones of the pelvis are united by cartilage and strong ligaments, and always continue so united in a healthy state. There are three articulations: one anterior, called the symphysis pubis, by which the two pubic bones are united; two posterior, by which the ossa innominata are united to the sacrum, one on each side, and are called the right and left sacro-iliac synchondrosis.

CONTENTS OF THE PELVIS.—The pelvis contains the bladder, the rectum, the vagina, the uterus, and its appendages.

DIVISION OF THE PELVIS.—The pelvis is divided into the superior and inferior aperture or cavity. The upper brim is the inferior boundary of the superior cavity; it is of an oval form, to correspond with the shape of the foetal head. The hip-bones form the sides, and the abdomen the front of this cavity. It is also called the *false pelvis*.

The inferior aperture or cavity is of an irregular quadrangular form, and constitutes that bony, crooked canal, through which the foetus has to pass, and with which we can not make ourselves too familiar. Its anterior wall is formed by the os pubes; its lateral walls by the ischium; and its posterior wall is formed by the sacrum and coccygis.

DIAMETERS OF THE OUTLETS OF THE FEMALE PELVIS.—The longest diameter of measurement of the superior strait is the transverse, or that from side to side, which measures about five and a half inches on an average, and is called the standard measurement. The next diameter is the oblique; this is measured from the sacro-iliac symphysis (or where the os innominata is united to the sacrum) to the back of the acetabulum, and in the standard pelvis is five and a quarter inches. The shortest diameter is the antro-posterior, which is measured from the symphyses pubis to the promontory of the sacrum, and in the standard or average pelvis is four and a quarter inches.

The diameters of the inferior strait are the reverse of the superior; for the antro-posterior, instead of being the shortest, as in the superior strait, is, in the inferior, the longest, and is equal to the oblique diameter of the superior, which is five and quarter inches in length: and is measured from the arch of the pubes to the tip of the coccygis; while the transverse diameter of the inferior strait is measured from the tips of the ischium, and is four and a quarter inches—the same as the antro-posterior diameter of the superior strait.

DEFORMED PELVIS.—It occasionally though rarely happens that the pelvis is deformed, which may arise from rickets, mollities ossium, bony and other tumors; this deformity may be so great, that a foetus at full term can not pass. Various instruments have been invented to measure the pelvis during life, such as the pelvimeter of Catoule, and the callipers of Baudelocque; but the *accoucheur's fingers, intelligently used, make the best pelvimeters and callipers known*—vastly superior to all instruments ever invented for the purpose.

To measure the diameter of the living pelvis, pass the middle finger up the vagina, curving it upward and backward, till it reach the promontory of the sacrum; then observe what part of the finger or hand is in contact with the symphysis, which may be applied to a rule when withdrawn: this will give you the antro-posterior diameter. Again, by depressing the tip of the finger, so as to rest upon the tip of the coccygis, you may ascertain the antro-posterior diameter of the inferior strait in a similar manner. But sometimes there are contractions on one or both sides of the promontory, or an acute angle may exist at the symphyses pubis: to detect these, we may introduce two or three fingers into the vagina; we can

then span round, by stretching our fingers, and thus easily detect any deformity that may be present; lay your fingers flat against the back of the symphysis, to detect any angle which may exist in the symphysis pubes. In this way, every necessary information may be obtained respecting the diameters and deformities of the female pelvis.

DIFFERENCE IN THE MALE AND FEMALE Pelves.—The male pelvis is narrow, deep, and strong, enabling him to walk with a firm step, and fitting him for great exertions of strength. The female pelvis is light, shallow, and capacious, which is the cause of that swelling of the hips by which the female form is distinguished from the male, and which, while it adds to the beauty of woman, lessens her strength, but at the same time most wonderfully fits her for the important function of parturition. If we place the male and female pelves by the side of each other, and compare them, we shall easily perceive that in the male pelvis there is a certain roughness, bulkiness, and weight, which strikingly contrast with the lighter, smoother, and more elegant pelvis of the female. In the male pelvis, too, the wings of the ossa innominata are more erect; in the female, they are more expanded. In the male pelvis, the brim is more rounded, and although tending somewhat to an ellipsis, the long diameter stretches from before, backward; in the female, the brim is generally oval, and the long diameter from side to side. In the male, the pelvis is deep; in the female, it is shallow.

In the male, we have a very small outlet; in the female, we have a very capacious one. In the male, the arch of the pubes is contracted; in the female, it is expanded, to make room for the more ready passage of the head of the child. So that, in general, nothing is more easy than for an accoucheur to distinguish at a glance a male from a female pelvis, although it may have been buried for many years, and no other part of the skeleton found.

CHAPTER II.

THE FŒTUS.

WE may now advantageously turn our attention to the properties of the fœtus, so far as they relate to its passage through the pelvic canal.

While in the womb, the various parts of the child are packed together in such a manner as to occupy the least possible space, forming a mass somewhat of an oval shape. The head is flexed, so as to bring the chin upon the thorax, the arms are applied to the sides, and the forearms and hands flexed and applied, often crossing each other, to the breast; the thighs are flexed on the abdomen, and the legs upon the thighs, the feet often, like the hands, crossing each other. In this way the head forms one extremity of the oval we have mentioned, while the other is composed of the feet and nates.

The fœtus, we are to observe, is somewhat flexible in a lateral direction, very much so anteriorly, and but little posteriorly. The parts of it requiring to be particularly measured and examined are, the head, the shoulders, and the breech. The first more especially demands our attention, both as being, upon the whole, the most bulky and least compressible, and also as being the part which is usually first engaged in the pelvic passages.

The head of the fœtus, detached and without the face, is described as oval, with the large extremity posteriorly. The desire of pointing out resemblances seems to be a besetting passion with anatomists; but, in truth, in this, as in many other instances, the likening of the head to any known figure conveys but little information. The student, then, who desires correct notions upon the subject, must set before him a fœtal skull of the standard (or average) dimensions and shape, and carefully examine upon it the properties which I shall now endeavor to indicate.

The first circumstance that strikes us in our examination is the great mobility of the bones upon each other, owing to their incomplete ossification, and the cartilaginous connexion between them.

To these separations between the bones the term *suture* is applied. That which passes from before backward, between the parietal bones, is called *the sagittal suture*; that which separates the parietal bones from the frontal, is called *the coronal suture*; while that between the parietal bones and the occipital bone behind, is *the lambdoidal suture*.

The mobility of the bones is also increased by the prolongation of the sagittal suture through the centre of the os frontis, so as actually to divide it into two bones, and it can be produced to such an extent as to admit of the bulk of the head being considerably diminished in one of its diameters, and proportionally increased in another. The situation and yielding nature of the sutures requires to be attended to; their general direction is the same as in the adult, but the sagittal is always prolonged, as we have mentioned, to the root of the nose: sometimes, but rarely, it passes backward into the occipital bone. At the junction of the lambdoid and sagittal sutures, owing to the non-ossification of the occipital and parietal bones, a triangular space is left, closed only by cartilage, and called the lesser or posterior fontanelle. A similar but larger space occurs between the parietal and frontal bones, at the intersection of the coronal and sagittal sutures; this is termed the greater or anterior fontanelle, and is distinguishable by being lozenge-shaped, and having four concurrent sutures, while the former is triangular, and has only three concurrent sutures. A knowledge of the differences between these fontanelles will assist us in a diagnosis of the situation of the head during labor.

"The head of a child at birth," observes Dr. Waller, of London, "is composed of a number of bones, having loose cartilaginous attachments with each other, called sutures. This will allow of its being squeezed or fashioned into the shape of the cavity through which it is passing; and hence, when the action of the uterus is powerful, a very considerable degree of difficulty may be overcome in consequence of this accommodative power. Where the sutures are ossified, of course this moulding process can not take place."

We shall now inquire into the dimensions of the standard fœtal head, which are usually measured by lines, somewhat loosely denominated diameters.

The shortest of these is the bi-parietal, or that stretched between the tuberosities of the parietal bones on either side, and is about three and a half inches or three and a quarter inches in length; this, it is plain, can meet with no obstruction in passing through any part of the *standard* pelvis, the shortest diameter of the latter being nowhere less than four inches.

There are, however, three other measurements to be considered, which, from being all in the long axis of the head, are usually called the long diameters. One or other of these, together with the bi-parietal diameter, may be considered as the measure of the bulk of the passing body, in every head-presentation.

The shortest (called occipito-frontal), and that which is most usually opposed to the long diameters of the pelvis, is described by an imaginary right line, extending from the upper part of the forehead to the lower part of the occiput. This can only become the opposing diameter when the chin is very much depressed toward the chest, as it usually is, the vertex being the presenting part. The length of this line is about four inches, which, it will be remembered, is not greater than the shortest diameter of the pelvis, but as it is naturally opposed to the longest diameters of that passage, there can, of course, be no want of room in such a case. Such, then, are the relations, as to dimensions, between the head and pelvis under the most favorable circumstances.

The next in length, of the great diameters, is that between the lower part of the forehead and the upper part of the occiput (called antero-posterior). It usually measures four and a half inches, being about half an inch longer than the last. This comes to be the opposing diameter in that variety of head-presentation in which the head is extended upon the neck and the forehead applied toward the pubis, called also the fontanelle-presentation, in consequence of the anterior fontanelle being in such cases the presenting part.

The longest diameter of the head is that between the point of the chin and the vertex. It measures five inches, and is the opposing diameter in another variety of natural presentation, viz., when the face is the presenting part: it must be obvious that this position of the head will materially increase the difficulties of its transit.

The *depth* of the head, from the sagittal suture to the occipital foramen, may be estimated at about three and a quarter inches.

The dimensions, of course, vary in different individuals, but those we have given are about the average. The heads of female children are usually somewhat less than those of males: Dr. Joseph Clark, in the "London Philosophical Transactions," estimates the difference at one twenty-eighth or one thirtieth of the circumference.

The movements of the head now claim a little attention. These are, flexion forward and extension backward; both, especially the former, capable of being carried to a considerable extent. Direct lateral inclination is only admitted to a slight degree, and rotation can be carried just so far as to allow of the chin resting on the shoulder, but not further, without endangering the child's safety.

We have spoken of variations from the natural form and average size of the pelvic passage, and we shall also be liable to detect similar deviations from the standard in the head of the fœtus. It may, for instance, be very small, which of course will have no effect, except to facilitate its expulsion. It may, on the other hand, be very large, and if it be so, disproportionately with the size of the pelvis, difficult labor will be the consequence, and it is even possible that the use of instruments may be necessary. On this point, however, it is proper to think with caution, as the extraordinary change of shape which may be effected on the head by compression, will often suffice to counterbalance even a considerable disproportion of size.

The head is occasionally enlarged, while in the womb, by hydrocephalus, and may require diminution by means of instruments: the head of a dead fœtus is also sometimes swollen by the air disengaged during putrefaction. A peculiar form of head is not *very* rarely met with, in which the upper portion of the cranium is malformed, and partly deficient, and the situation of the brain occupied by a sort of fungous mass. These are denominated acephalous, or (by the Germans) cat-headed fœtuses: they may create confusion in our first examinations, by wanting the peculiar firm feel of the natural head, but they are not often themselves productive of difficulty in the act of parturition.

The shoulders of the fœtus are generally about five inches in breadth, but the effect of their size is counteracted by their possessing capability of motion to such an extent, that one can precede the other in their entry into the pelvis.

From what has been said, it is obvious that the long axes of the head and shoulders decussate, or are at right angles with each other; and we can now perceive the value of a similar arrangement which we adverted to before, of the long diameters of the brim and outlet of the pelvis. At the moment when the head is escaping in the most favorable manner through the latter, the shoulders are accommodated in the long diameter of the former.

We have next to say a word upon the pelvic extremity of the fœtus, as it is packed in the uterus, and sometimes presents in the pelvic passage. Occasionally, the nates form the whole bulk of the presenting part; at other times the feet are assembled with them; and, again, the feet or knees pass first into the world. These differences make a good deal of variation in the antero-posterior diameter of the pelvic extremity, but it is almost always less than the transverse, which pretty constantly measures four inches.

PRESENTATION AND POSITION.—Before proceeding to the consideration of the mode in which the child is propelled through the pelvis, we shall briefly explain the meaning which we attach to two words frequently employed, and already made use of in the preceding observations, viz., *presentation* and *position*. By the first, we wish to designate that part of the child which, during labor, may be opposite the centre of the pelvic passage; and by the second, the relative position of the child with respect to the bones of the mother's pelvis. Thus, if we say *the vertex presents*, we announce the presentation; and if we add, *with the occiput toward the pubis*, or *toward the sacrum*, as the case may be, we describe the position.

CHAPTER III.

PARTURITION, OR LABOR.

SECTION I.

CAUSE OF LABOR.

DEFINITION OF LABOR.—By the term labor, we understand *the progress and final expulsion of the fœtus and secundines from the uterus, at the full period of gestation, or pregnancy.*

When gestation or pregnancy is completed, a new action is set up in the uterus, which is denominated labor, or parturition.

Various have been the theories which have prevailed in different ages of the world, respecting the immediate or exciting cause of labor. Some have ascribed it to the reaction of the over-distended uterus; others to the instinctive efforts of the fœtus, &c.

Hippocrates, and indeed all the ancients, believed that a child was born *by its own efforts*—efforts which, as some supposed, it was incited to make by the necessity it felt for breathing cool air, in order to moderate the heat which had been generated by its long confinement in the uterus.

By others it was supposed that the fœtus was incited to these instinctive efforts by a *want of nourishment*, the sources of which they supposed had either failed or become depraved.

By one school it was taught that the fœtus was excited to these efforts by the *acridity of the meconium* and other secretions of its body; while by another, with equal confidence, it was affirmed that the fœtus was only stimulated to these efforts by the *want of room for its future growth*, and that therefore it escaped out of the uterus as out of a prison.

These, and a thousand other variously-conflicting and contradictory opinions, respecting the cause of labor, have been tenaciously held by different schools and in different ages, not one of which at all contributes to elucidate the true cause or origin of its phenomena.

Why the fœtus, which for nine months had been a stimulus to the growth of the uterus, should now suddenly turn round, as it were, and stimulate it to contract, throw off the fœtus, and return to its original size, none of the above, nor any other speculations, give us any more satisfaction respecting it than does the declaration of *old Dr. AVERCENNA* (an Arabian physician of the eleventh century), who, with great humility and devotion, contents himself by saying, “*At the proper time, labor comes on, at the command of God;*” or as another author of more modern date, the late Dr. Bard, of this city, remarks, “*We know no more of the immediate, exciting cause of labor, than we do why strawberries ripen in June and peaches in August. It is a law of nature, established by the Creator: that is all we know about it.*”

But while we know nothing of the immediate or exciting cause of labor, we do know something of the efficient cause; or, in other words, we do know that the contractions of the uterus are the chief agents in its accomplishment. That these are the chief agents in the act of parturition, is evident from the fact that women have been delivered of both living and dead children, who have been paralyzed in all the voluntary muscles of the lower half of the body. Others have been delivered by the contractions of the uterus alone, in whom that organ had suffered perfect prolapsus in the early part of pregnancy, in which case, of course, its contractile action could be seen; and, in the former case, no other muscles

could be brought to assist, on account of their loss of action. Yet, in ordinary cases, both the abdominal muscles and the diaphragm, especially in the latter part of labor, do assist in the expulsion of the fœtus, although they are not absolutely necessary to its ejection.

If we examine the construction of the uterus, we shall find that it contains both transverse and longitudinal fibres; the contractions of which, in each direction, when in action, must necessarily lessen the volume of the uterus, and expel the child. It is by this beautiful mechanism that the Creator has provided for the expulsion of the product of conception, and the subsequent restoration of this vastly-augmented organ to its normal size.

SECTION II.

PHENOMENA OF LABOR.

WE shall now briefly explain the phenomena or mechanism of labor, when the head presents, which consists of a beautiful application of mechanical contrivance employed by the Creator to accomplish delivery, and demonstrates, in language which can not be misunderstood, the wisdom and perfection of the Divine Architect.

The impression of a person unacquainted with the anatomy and physiology of the parts through which the fœtus has to pass, would be, that it descended in a straight line from the uterus, in the abdomen, into the external world; but this is far from being the fact. The opening through which the child has to pass is a *crooked canal*; and it describes in its passage a *perfect half circle*: besides, the diameters of its brim or entrance and outlet are reversed. Therefore, in order for delivery to take place, there must be a spiral motion of the fœtus, to enable the head and trunk exactly to adapt themselves to the mechanism of the pelvis in their transit through this crooked, bony canal. The head, on entering the brim, or superior strait, enters diagonally, with the occiput behind one acetabulum, generally the left, and the forehead toward the sacro-iliac synchondrosis (generally the right). In this position it descends obliquely through the superior strait; it then takes a quarter turn, so that the face lodges in the cavity of the sacrum, which motion brings the long diameter of the fœtal head to correspond with the long diameter of the outlet, which is the reverse of that of the superior strait. While the head passes the inferior strait, the shoulders are passing the superior or reverse diameter of the other.

Immediately after the head has passed the inferior strait, it makes a quarter turn, so as to bring the long diameters of the shoulders to correspond with that of the inferior strait. Thus this spiral motion is continued, from the moment the head enters the superior strait, till the trunk of the child is expelled from the mother; this motion resembles somewhat the spiral turn of a screw-auger. From these facts, then, we may deduce the following beautiful yet simple law respecting the mechanism of labor, where the head presents, viz., that the head enters, passes through, and emerges from the pelvis, not directly forward or downward, but obliquely or spirally.

By this arrangement the *side* of the head is always lowest or deepest in the pelvis; all which exemplifies the beautiful mechanism and nice adaptation of the motions of the fœtus to the hard, crooked, bony canal, through which it has to pass: for, on account of this oblique position, there is no moment during the whole of labor in which either the greatest breadth or length of the fœtal head is occupying any of the short diameters of the pelvis. And this obliquity of the presentation, and spiral motion of the child, is continued till the whole fœtus is expelled: thus admirably exhibiting the great wisdom displayed in the exact adaptation of the means to the end contrived in the act or phenomena of parturition.

SECTION III.

FACILITY OF LABOR.

WHY the human female suffers more during child-birth in civilized society than she does in rude or savage life, or more than is suffered by the female of the brute creation, is a subject worthy of the deep investigation and profound research of the philanthropist and the philosopher. It has been supposed to arise from the fact that the pelvis, through which the child has to pass, forms a *crooked canal* in the human female, while it is *straight* in the lower animals. This, doubtless, is one cause of the increase of pain; but this is comparatively little, for the God of Nature is always uniform in his operation, adapting the means to the end with wonderful precision. And if we cast our eyes abroad in the world, we shall see a vast difference in the facility of labor among the different tribes and nations of the earth, although human females possess a pelvis *fashioned after one general model*; so that this is not the only nor yet even the principal cause of difficult and painful labor.

We are told that, among some of the Indian tribes of our own country, when a woman finds her labor approach, she retires alone to some secluded spot near a stream, and there, without assistance, remains till she is delivered; when, after having *washed her infant and bathed herself in the water, she returns to her cabin and her occupations*: thus showing that labor among them is accomplished with nearly the same facility, to say the least, that it is even among the inferior animals.

Washington Irving corroborates this account of the Indian females, in his travels among them. He relates that "a squaw belonging to the company, who was pregnant, one day left the company, and the next day overtook us on her horse, with her infant in her arms, and rejoined our party."

What a striking contrast is this to the management during a labor of one of our fashionable women! Great preparations must be made: a nurse and perhaps other women engaged; and, *of course, the services of a doctor must be secured a long time previously to the expected event*—the whole affair assuming a most serious aspect. Perhaps the woman will be put under a course of physic, or bleeding, or both, during gestation, in order to prepare her for the important occurrence; and not unfrequently, at the time of her accouchement, by the untimely and often unnecessary interference of the doctor and his instruments, endanger, yea, may even destroy the lives of both mother and child. Examples of this kind we know have often occurred, and that, too, under the management of some of our most celebrated physicians. This contrast between one of our "fashionables" in labor, and the females of our forest, may teach us a very important practical lesson.

The same facility in child-birth is said to take place in the females of many other nations besides our Indians—as the natives of Abyssinia, and most other African nations. In some parts of the West India islands the slaves are seldom confined from employment more than a day or two, and very difficult cases of labor seldom occur among them. The females among the lower class of Irish, and indeed all females who have much exercise in the open air, bring forth their young with less pain and suffering than do American women.

Parturition is not followed by the same degree of exhaustion in those women who are employed in manual labor in the open air, even in this country, as it is in those females who move in what are termed the "higher circles," whose life is almost wholly artificial. We see the wives of laborers in the country, as a general rule, soon able to resume their duties after their confinement; while the wives of the same class of society in our large cities are confined from their duties much longer, and they require more care and attention; and serious and fatal consequences often result.

Now I believe this difference arises from the more sedentary habits of those in the city, and the artificial state of society to which they are subject. To what else, but the *perversion of our nature*, is the origin of these difficulties to be ascribed?—by deviating from her established laws in our habits, customs, and fashionable way of living—our erroneous diet, want of exercise, *tight lacing*, and various other

fashionable vices common to civilized society : to these, rather than to the peculiar form of the pelvis, is woman indebted for the chief portion of the pains of labor, as is proved by those who live more *agreeably to Nature's laws*.

"In proportion," says Crantz, in his "History of Greenland," "as we remove women from a state of simplicity to luxury and refinement, we find that the powers of the system become impaired, and the process of parturition is rendered more painful.

"In a state of natural simplicity, women in all climates bear their children easily, and recover speedily. The Greenlanders, mostly, do all of their common business just before and after delivery ; and a still-born or deformed child is seldom heard of."

Long tells us that the American Indian women, as soon as they bear a child, go into the water and immerse it. "One evening, I asked an Indian where his wife was. 'He supposed she had gone into the woods to set a collar for a partridge.' In about an hour she returned with a newborn infant in her arms, and coming up to me, said, in Chippeway, '*Oway, Saggonash, payshik shomagonish ?*'—or, Here, Englishman, is a young warrior!"

M. Chardin, in his "Voyages," remarks as follows : "Comme les accouchemens sons tres-aises en Perse, de même que dans les autres pais chauds de l'Orient, il n'y a point de sages femmes. Les parentes âgées et les plus graves, font cet office, mais comme il n'y a queres de vieilles matrones dans le harum, on en fait venir dehors dans le besoin."

Lamprière also observes : "Women in this country (Morocco) suffer but little inconvenience from child-bearing. They are frequently up next day, and go through all the duties of the house with the infant on the back."

Winterbottom says that, "with the Africans, the labor is very easy, and trusted solely to nature, nobody knowing of it till the woman appears at the door of the hut with the child."

"The Shangalla women," says the traveller Bruce, "bring forth children with the utmost ease, and never rest or confine themselves after delivery ; but, washing themselves and the child with cold water, they wrap it up in a soft cloth, made of the bark of trees, and hang it up on a branch, that the ants with which they are infested, and the serpents, may not devour it."

In Otaheite, New South Wales, Surinam, &c., parturition is easy ; and many more instances might, if necessary, be adduced. We are not, however, to suppose that in warm climates women do not sometimes suffer materially ; for Bartholomew states that, in the East Indies, "many of the women lose their lives the first time they bring forth." This may be ascribed to youthful marriages, at the age of nine or ten.

Undomesticated animals generally bring forth their young with considerable ease ; but sometimes they suffer much pain, and, when domesticated, occasionally lose their lives.

"With respect to the facility of labor," says Dr. Dewees, "it would be wrong to suppose that the labor of the female brute is performed upon different principles from that of the human female, because she is for the most part exempt from pain ; for truly the same general process occurs in both, and in each the uterus exerts the same kind of action. The only difference is, the one is performed with pain, and the other without. Whatever difference, therefore, there may be in the pain of each, must arise from artificial causes. This would seem to be proved by the consequences which seem everywhere to follow civilization and refinement.

"The consequences of domestication may be traced in those animals which participate with man in his departure from his original simplicity : for we are informed that the artificial condition in which the cow is placed, in our large cities, subjects her to more difficult and dangerous labors than those in the natural or less artificial state."

A lady in this city has written an excellent treatise on this subject, entitled "Child-Birth without Pain," the object of which is to prove that if females were to live up to the laws of their being, established by the Creator, they would be measurably exempt from the sufferings which they now experience in labor, and would produce their offspring with equal facility with the brute creation ; that if these laws were obeyed, instead of seeing one half the human race *cut off in infancy*, their children would be as

exempt from disease as the young of the lower animals. This subject affords a very interesting topic of inquiry to the physiologist, the philosopher, and the philanthropist; and, if duly investigated by them, would no doubt lead to discoveries and improvements in the mode of living, which would tend to bring back the human family to that state of simplicity and happiness which was intended by their Creator, and would also cut short at least *half the diseases which affect our race*, and thus extensively ameliorate the condition of our species.*

SECTION IV.

PREMONITORY SIGNS OF LABOR.

AMONG the symptoms of approaching labor, is, *subsidence of the abdomen*. Some days before labor commences, we may observe a remarkable subsidence of the abdomen, and diminution in the size of the woman is apparent. She feels lighter, breathes freer, and is more cheerful. This is occasioned partly by the sinking of the cervix uteri or neck of the womb and its contents into the brim of the pelvis, and partly by the gradual closure of the uterine walls previous to their taking on active contractile efforts. When this symptom is present, it is always a favorable one, because it indicates room in the pelvis; for if the head will sink into the pelvis covered with the uterus, there can be no want of room for it there when it is forced out of the uterus. This symptom of approaching labor is not present where there is any disproportion between the head and the pelvis, from any cause.

RELAXATION AND MOISTURE OF THE PARTS.—In approaching labor, considerable relaxation, and increased moisture of the vagina and external parts, are observed, frequently causing some slight tumefaction of the vulva. This is a good symptom when it occurs, because it shows that there is a disposition in the passages to become relaxed and dilated.

Some physiologists would teach us that dilatation in labor is entirely a mechanical act; that, as the uterus contracts, it propels the head, first through the os uteri, by dilating it mechanically, then through the vagina, and lastly through the external parts, solely by the same forcible distention. It is evident, from the structure of the organs, that a mechanical dilatation to so great an extent never could take place, unless a corresponding disposition to relax were given them at the same time; and therefore we must consider the dilatation of the passages not entirely dependent on mechanical distention, but that it is principally to be attributed to one of Nature's unerring laws, by which the parts become relaxed and softened when the uterus is about to commence its contractions.

ANXIETY AND RESTLESSNESS.—We often observe, several days before labor commences, an unusual anxiety, restlessness, and concern, respecting the issue of the case; sometimes fearful forebodings seize the mind, but an increased *anxiety* is always present, as a precursor of labor.

IRRITABILITY OF THE BLADDER AND RECTUM.—This is manifested by an increased desire to urinate, and evacuate the bowels. Sometimes this is very troublesome. It is caused by the head of the child pressing on the nerves of the bladder and rectum; sometimes there is a tingling or even numbness in one of the limbs—seldom in both—arising from the pressure of the child's head on the great sciatic nerve. This generally disappears when the labor has made some progress. Should irritability of the rectum become very annoying, and the labor not making much progress, we may give a demulcent injection; if this does not arrest it, we may repeat, and add a few drops of laudanum.

NAUSEA AND VOMITING.—These very often accompany the early part of labor, and sometimes even in its more advanced stage; it is a good symptom, and is usually the precursor of full relaxations of the parts.

* Those who may wish to investigate this subject further, are referred to the treatise above mentioned—"Child-Birth without Pain," by Mrs. Pendleton, of this city—and also another work, by the same author, entitled "Moral and Physical Traits transmitted by the Parents to their Offspring." See also "Walker on Intermarriage."

GLARY MUCUS TINGED WITH BLOOD.—Sometimes, with the above premonitory symptoms, we have combined a discharge, which issues from the vagina, consisting of mucus tinged with a little blood. This is what the nurses call a *show*. The mucus issues from the large and numerous follicles which lie in the mouth and neck of the womb, and the blood consists of a small drain from a few capillary vessels passing from the cervix uteri to the membranes which have been ruptured by the slight dilatation of the os uteri. Hence it is, because the *show* of blood is indicative of the dilatation of the os uteri and descent of the membranes, that this sanguineous appearance may be looked on as the token of labor actually commencing.

INTERMITTENT PAINS.—When labor actually commences, it usually does so with more or less pain at intervals. These pains may be frequent or remote—occurring every few minutes, or with an interval of half an hour or more between them. Labor usually commences with pain, but it may make considerable progress without any pain whatever; sometimes the os uteri is dilated before any pains have been experienced, but these cases are very rare: the patient is much more likely to be tormented with—

FALSE PAINS.—There are two kinds of pains which are liable to manifest themselves at the latter part of pregnancy, and about the commencement of labor: the one is called *true*, and the other is called *false pains*; and it is of the utmost importance, both to the patient and to our own reputation, to be able to distinguish them. This we may readily do by keeping before our minds the following distinctions:—

1. False pains do not recur uniformly, as do true pains. We have stated that true pains are regular in their intervals: they may recur once in half an hour, or once in five minutes—or in any intervening time; but whatever form they assume, they are *regular*: for example, there will not be an interval of one *quarter of an hour* between one paroxysm, and *five minutes* between the next. Whatever form they assume, they are regular, except in this particular, that they gradually become more frequent. If, therefore, the pains are very irregular in their recurrence, they are generally *false pains*.

2. False pains are very apt to come on at night, trouble the patient very much, and pass off during the day. Sometimes the patient will be annoyed for four or five weeks, or even longer, by these pains, before labor commences; they are more frequent in *first pregnancies* than in subsequent ones.

3. But the only means of distinguishing false from true pains with absolute certainty in all cases, is, to ascertain their effect on the uterus. *False pains, however severe, do not concentrate themselves upon the uterus, nor at all accelerate the labor.*

If we place our hand on the abdomen during the pains (the patient lying on her back, with her limbs flexed), if they are true pains, we shall feel the uterus contract and become harder under our hand as the pain increases, and grow softer again as the pain goes off; but if they are false pains, they will not have any effect on the uterus. Again, if we examine the vagina during a true pain, we shall feel the os uteri dilate a little, and the membranes protrude through the os; but if the pains, however severe they may be, have no effect on the os uteri, they are false and spurious.

Sometimes the midwife or the accoucheur has been kept for several days in attendance, and the pains have at length gone off, and perhaps the woman has not been in labor for a month or more. Dr. HASSELL (who has made midwifery and the diseases of women and children his peculiar study) has just related to me a case in point, of a young doctor who had been *three days* attending upon a woman supposed to be in hard labor, but no progress was made. The doctor said he could not make out the presentation, and thought it must be a *cross birth*. At length he begged of Dr. Hassell to accompany him and examine the case, which he did, and found the pains very much to resemble labor-pains, and well calculated to deceive any one who judged from appearance only; but the pains had no effect on the os uteri, or, in other words, the woman was not in labor. He took the young doctor aside, and told him that the woman was not in labor, and that if he would evacuate the bowels freely, and then give her an anodyne, he might perhaps leave her comfortable for a *month*. He did so, and she had no return of the pains; and in *one month and two days afterward, she was delivered of a fine child, after about six hours' labor.*

Now those who do not know enough to distinguish false from true labor-pains, ought to acquire more knowledge on this subject. Strict attention to the above rule will prevent the possibility of such mistakes.

Remember that false pains, however severe, produce no effect on the os uteri; while all true labor-pains produce contractions of the uterus, which can be felt by the hands through the abdomen, and also produce dilatation of the os uteri, and some protrusion of the membranes, which may be readily felt by examination per vagina. To prevent the possibility of mistake, we may examine both ways, if necessary, or if we have any doubt.

TREATMENT OF SPURIOUS OR FALSE PAINS.—This will depend materially upon the cause, and the state of the system. Frequently it arises from a costive state of the bowels; the length of time that the rectum may remain during pregnancy without an evacuation, and the woman appear to feel no inconvenience from it, is far beyond what we might suppose: a fortnight, and even three weeks, is not uncommon. And we often find it very difficult to ascertain the true condition of the bowels; for the patient herself is frequently deceived, and imagines that her bowels are quite regular, because she has a daily inclination to go to stool: when there is perhaps on such occasions a slight, scanty discharge of loose, feculent matter, leaving the mass undisturbed. We can not, therefore, pay too much attention to this state of the bowels, because, when the rectum is in this condition, the whole of the large intestines become distended with wind, which causes spasmodic pains, that are often mistaken for labor-pains; the distended rectum may be felt through the walls of the vagina in such cases. The indication is, here, to evacuate the bowels by a mild purgative, as castor-oil, &c., and at the same time give a large but mild and emollient enema, perhaps of warm water and molasses—not an irritating one. All irritating purgatives and enemas at such times should be avoided, because they may be, and are, indeed, liable to communicate the irritation by sympathy to the uterus, and perhaps bring on premature labor. After the bowels are thus thoroughly evacuated, give an anodyne if any pain, irritation, or restlessness remain. Instruct such a patient to keep her bowels regular during the remainder of her pregnancy, and she will pass it in tolerable comfort; at least she will not be annoyed by false pains.

Sometimes these false pains will follow the opposite state of the bowels, or a protracted diarrhœa: then an anodyne only will be needed; generally in severe cases, however, it may require to be treated as in diarrhœa or dysentery, as laid down in my “Reformed Practice of Medicine.” Where neither obstinate constipation nor diarrhœa prevail, an anodyne may be given immediately (as the tincture of hop), followed by some gentle aperient, and all false pain will be removed.

SECTION V.

CLASSIFICATION OF LABOR.

ALMOST every systematic writer on midwifery, since the days of Hippocrates, has adopted some classification of labors, in accordance with his own views. The great father of medicine, as he is called, adopted but two classes, *natural* and *unnatural*. He called all those labors natural in which the head presents, and all those unnatural where any other part besides the head presents. Smellie, who wrote in 1752, added to this simple arrangement another class, which he calls *laborious labors*, in which class he includes all those labors in which either manual or instrumental assistance becomes necessary. Baudelocque also divided labor into three classes, as did Smellie, but his arrangement was different: he called all labors natural which are terminated by the natural powers, whether the head, breech, or the inferior extremities present; he calls all those preternatural which present by the side or upper extremities, which, although they may require the aid of art, that assistance is afforded by the hand alone; he calls all those laborious labors where instruments become necessary.

Dewees follows the arrangement of Baudelocque, except that he divides instrumental deliveries into two orders: the one accomplished by instruments which are supposed to do no injury, either to mother

or child; the other accomplished by cutting instruments applied either to the foetal or the maternal body.

Davis makes four classes: natural, when the head presents; preternatural, when some other part presents; complex, when some accidental circumstance of an embarrassing nature occurs; instrumental, when assistance by instruments is necessary.

Blundell adopts five divisions: he calls those natural, when the head presents, and the whole labor is terminated in twenty-four hours; preternatural, when some other part of the child presents; flooding, when attended with hæmorrhage; laborious, when instruments are required; and anomalous, when some extraordinary symptoms are superadded.

Ashwell makes three divisions: natural, difficult, and flooding. Merriman arranges all labors under two classes only, which he calls *entocia* and *dystocia*, from Greek words signifying *easy* and *difficult*; but under *dystocia*, or difficult labors, he introduces fifteen orders, embracing every circumstance that can in any way render the case tedious, difficult, or dangerous.

Conquest includes all labors in two classes—natural and preternatural—and divides the second class into six orders. Power arranges labor under two heads, *entocia* and *dystocia* (easy and difficult), and he divides the latter class into three orders, *nervosa*, *mechanica*, and *accidentales*, into which he introduces twenty-four genera. Ryan makes four classes—natural, preternatural, manual, and instrumental—which he subdivides into forty-three orders. Burns multiplies the classes to seven—natural, premature, preternatural, tedious, laborious, impracticable, and complicated.

Denman divides labor into four classes—natural, difficult, preternatural, and complex. Hamilton, Lee, Ramsbotham, and a host of others—in fact, almost all late English authors—adopt Denman's division, with some slight modifications. He defines natural labor to be one in which the process is complete within twenty-four hours, the head of the child presenting, and no adventitious assistance being required. But many authors have regarded natural labor as much more contracted in its features. Thus, Mauriceau considered it essential to a natural labor that the foetus should be living; Burns, that it should have arrived at intra-uterine maturity; Baudelocque, that the vertex should present; Merriman, Burns, and Campbell, define it to be a vertex presentation, in which the face turns into the hollow of the sacrum before expulsion. There is also a difference with regard to time proposed by different professors: thus, Professor Cooper restricts the period to twelve, and Professor Power to six hours.

The following is the classification which we shall adopt, and under which we propose to embrace every kind of labor which it is necessary to distinguish:—

We shall divide all labors into five classes—*natural*, *difficult*, *unnatural*, *complex*, and *instrumental*.

By *natural labor*, we mean those labors in which the head presents, and which are completed with ordinary facility, without any artificial assistance from medicine, the hand, or from instruments.

By *difficult labor*, we mean those labors in which the head of the child presents, but which is not born with ordinary facility, being protracted, and usually requiring assistance, either from medicine, the hand, or possibly from instruments.

By *unnatural labor*, we mean all those labors in which any other part except the head presents.

By *complex labors*, we mean all those labors, whatever be the presentation, in which some untoward circumstance occurs, or is complicated with it.

By *instrumental labor*, we mean all those labors which can not be terminated without the use of some artificial instrument, which I believe to be extremely rare.

CHAPTER IV.

NATURAL LABOR.

DEFINITION.—By the term *natural labor*, we mean all those labors which occur at the full period of gestation, in which the head presents, and which are completed with ordinary facility, without requiring any artificial assistance from medicine, the hand, or from instruments.

Natural labors form a standard, by which we judge of and measure every other class of labors. It is, therefore, indispensable that we should first obtain a precise and accurate knowledge of natural labor, before we can *begin to understand difficult, complex, or instrumental labors*.

If, in any given case of labor, any of the characteristics in our definition of natural labor be wanting, it is not a case of natural labor. For example, if any other part besides the head presents, it belongs to the class of unnatural labors. If the labor be such as to require assistance from medicine or the hand of the accoucheur, it is a difficult labor, whatever may be the presentation. If convulsions, hæmorrhage, or any other unusual circumstance, occur during its progress, it is a complex labor. If the labor can not be concluded without the use of instruments, it belongs to the class of instrumental labors.

SECTION I.

STAGES OF LABOR.

ALTHOUGH labor is, in reality, but one continued process, from beginning to end, without any intermediate state or suspension between any one period and another, yet, for the sake of perspicuity and precision in treating of it, we shall find it very convenient to divide its progress into four stages :—

THE FIRST STAGE OF LABOR commences with the attack of *true* labor-pains, in contradistinction to those which are *spurious*, and occupies the whole period (whether long or short) from this attack till the full dilatation of the mouth of the womb. About this time the membranes generally rupture, and the waters are discharged.

THE SECOND STAGE OF LABOR commences with the full dilatation of the os uteri, and occupies the whole period during which the head of the child passes through the superior strait into the concavity of the sacrum, and presses on the perineum, dilating it and the external soft parts : thus forming what is termed the *perineal tumor*.

THE THIRD STAGE OF LABOR commences with the perineal tumor, and occupies the whole period during which the head and body of the child are being expelled, and the cord divided.

THE FOURTH STAGE OF LABOR consists in the expulsion of the placenta and secundines.

The accoucheur who keeps in mind this division of labor, and well understands the process which takes place in each—who has learned that, in a perfectly-natural labor, each of these processes is conducted by the unaided powers of nature—and who has been accustomed to sit by the bedside of a parturient woman, and there watch the efforts of nature in their steady, onward course, through all these successive stages—will at once see the impropriety, folly, and danger, of attempting, by any interference of his own, to shorten any one of these periods : and should he thus interfere, he knows that he would

only *interrupt the salutary efforts of nature*, and thus render the labor more painful, difficult, and dangerous: for he is well aware that every regular symptom and stage of labor performs a double office—not only accomplishing the present object, but preparing the parts, which are next to be concerned, for the more easy performance of what is to follow.

SECTION II.

THE FIRST STAGE OF LABOR.

THE first stage of labor, we have said, commences with the attack of *true* labor-pains, in contradistinction to those which are *spurious*, and occupies the whole period (whether long or short) from this attack till the full *dilatation of the mouth of the womb*. About this period, also, the membranes generally rupture, and the waters are discharged.

We must bear in mind that, during the first stage of labor, no sensible change is perceived in the position of the *fœtus*; the uterine aperture is the only part which experiences any marked alteration. The first stage of natural labor, then, is occupied in opening and dilating the orifice of the womb. This stage frequently commences with a slight shivering, and sometimes with a very considerable chill: when these symptoms are connected with regular labor-pains, they are esteemed favorable; but when succeeded by fever, they are unfavorable symptoms.

Most commonly, however, labor begins with pain in the back and loins; stretching thence across the abdomen to the pubes, and ending on the upper part of the thighs: this pain soon passes off, and leaves the woman free; but returns again, at longer or shorter intervals. These pains at first are generally slight, with long intervals between, but the intervals soon grow shorter, and the pains become exceedingly sharp and cutting. When they assume this character, the mucous discharge from the vagina is generally *discolored by a little blood*, called by nurses a *show*, arising from the rupture of some of the small vessels passing across the internal mouth of the womb during its dilatation, after which the very sharp and cutting sensation commonly abates; and although, on the whole, the pains grow stronger, and return at shorter intervals, yet they are usually less distressing, and are borne with less impatience. The cause of labor-pains is, unquestionably, the contractions of the muscular fibres of the uterus, by which it is lessened in every direction, but principally in its longest diameter, from the fundus to the os *tincæ*. When, therefore, all the longitudinal fibres contract, we can easily perceive that the os *uteri* must *be drawn back upon the presenting part of the child*, and thus cause it to be forcibly dilated; but the pains soon relax, from the nature of all muscular action, which, when natural, never can be permanent.

VARIATIONS IN THE POSITION OF THE OS UTERI.—In the early part of this stage, the os *uteri* is commonly found much nearer the sacrum than the pubes or other points of the pelvis; but as parturition advances, it comes more into the centre of the brim. At other times, it feels as if it were drawn toward either ilium; and sometimes, though rarely, it is felt much nearer the pubes than the sacrum. These occasional positions of the os *uteri* should be remembered, because it will tend to remove one of the greatest difficulties which the novice in midwifery has to encounter, viz., tracing the os *uteri* in the early stage of labor.

VARIATIONS IN THE STATE OF THE OS UTERI.—If an examination be made at this period (which should not be often repeated, and always performed with the greatest caution, for fear of breaking the membranes), the variety in the sharpness and severity of the pains in different labors, will be found connected with the situation, and to depend on the state, of the os *tincæ*. In some, it will be found soft, lax, and yielding—and, though not dilated, still dilatable; while in others it is hard, firm, rigid, and unyielding—not allowing itself to be at all distended by the finger, any more than a piece of hard leather would.

There are four chief varieties in the character of the os uteri, which we may meet with during the first stage of labor: The first is when it is thick, soft, moist, cool, sensible to the touch, but not painfully so—having very much the feel of a piece of thick, wet, chamois leather. The second variety is, when it is thick, hard, and rigid—perhaps also hot, dry, and tender—and gives a sensation to the finger very much like the touch of a piece of cartilage. In the third variety, the os uteri is thin, soft, moist, cool, and not painful when touched, its edge feeling like a piece of moist brown paper, and so thin that the head of the child can be distinctly felt through its substance. The fourth variety is when it is also not only found thin, but hard and rigid, sometimes very tender to the touch, and having a glazed feel, with its edge *surrounding the presenting part of the child*, and tightly embracing it, like a piece of whiplcord.

Under one or other of these varieties we shall always find the os uteri soon after the commencement of labor. In perfectly-natural labor, it will be found in one or other of the soft states; when found in either of the hard, hot, tender states, it generally indicates a difficult labor, which will at least need some assistance from relaxing agents, of which we shall speak more particularly when we treat of difficult labor. At present, except incidentally, we have only to do with natural labor. In natural labor, the os tincæ is at first generally found far back and high up, but sometimes so low that it is met with just within the vagina, with the edges thick and soft, and the opening small, and perhaps scarcely perceptible; as the pains continue, the internal orifice descends and comes forward in the vagina; the edges grow thin and soft, the opening enlarges, and after some time, will admit the end of the finger: a small bag is then felt within, which during the pain tightens and is distended, but, as the pain remits, becomes loose and flaccid. As the internal orifice of the womb enlarges, this bag protrudes through, and assists in dilating it. At length the thick edges of the orifice are entirely obliterated, and the womb and the vagina form one continuous canal, like a porter-bottle; and the membranous bag, no longer supported by the edges of the os uteri, give way, and the waters are discharged. Sickness and vomiting are frequent and salutary accompaniments of this stage of labor: the nausea contributes to the relaxation of the whole system, and the retching adds somewhat to the dilating effects of the pains.

DURATION OF THE FIRST STAGE.—The duration of the first stage of labor is very different in different women, and often *varies in the same woman in different labors*; but in general it requires more time with the first child than with subsequent ones, and in all well-formed women it commonly occupies much more time than any other stage of labor. If the membranes burst early, before the labor begins, or very soon after, the os uteri will require to be dilated by the head of the child: in this case, the pains in the back are generally more grinding, and the dilatation in all respects more tedious and painful; but if, on examination, the os uteri continue soft, cool, and without pain, it will only require more time, patience, and caution, in our examinations.

In ordinary cases, the first part of the dilating process usually advances slower than the later part; hence we find that that degree of dilatation under which the organ acquires the diameter of a half dollar—or sufficiently large to admit the tips of the two fingers—will perhaps occupy a longer period of time, than will its dilatation from that small size to the full and entire dimension which will easily allow the head of the child to pass through it. This partly arises, perhaps, from the natural disposition in the os uteri to open more readily after it has acquired a certain diameter; but it is doubtless owing also in some degree to mechanical action: for, when it has become expanded to such an extent as to admit the membranous bag or any portion of the child's head to occupy its aperture, the protruded part acts like a wedge, and forcibly distends it. The cause, however, is not entirely and purely mechanical, for it depends also in a great measure on the principle of vitality.

It is quite impossible that we can give even a probable estimate as to the time which any particular os uteri will require for the perfection of its dilatation; for sometimes one that has been from the commencement highly rigid, scarcely showing the least disposition to open, will suddenly become relaxed, and rapidly distend its circle to its full dimensions; while at another time, though the os uteri be soft and flaccid, the pains will altogether subside without any apparent cause, the process of dilatation become suspended, and the labor remain stationary for hours. In short, there is, particularly in this respect, so

great a variety, that it is in vain to attempt to assign any time to the duration of natural labor or any of its stages. Some women have been delivered in their sleep—in the room in which they were first seized, without being able to get to their beds—or while on a visit—perhaps in a ball-room—or in passing up or down stairs—at the close stool, or the privy—without having time allowed them to return home, or reach the house, or make the least preparation; while others occupy many hours: some require many days for the safe and happy accomplishment of a labor perfectly natural; and in some women there is, now and then, almost as great a variety in the duration of different labors.

NO ART CAN SHORTEN THIS STAGE.—In the first stage of a natural labor, according to the definition we have given of it, and consequently what we mean by the term, no skill or art of the midwife, nor exertion of the woman (in this stage) can in the least contribute to lessen the severity of the pains, or shorten their duration. They are intended by nature to accomplish a necessary and important object—the complete dilatation of the internal orifice of the womb; which, from a rigid ring, of some considerable thickness, and generally close shut, is to be softened, relaxed, and worn away, until it is entirely obliterated, and so prodigiously enlarged, as to permit the child to pass through. Hence we learn the reason why more time and pains are required to open the orifice of the womb to the size of a half dollar, than to obtain all the remainder of the dilatation necessary for the delivery; a fact which young practitioners should constantly recollect when forming an opinion on the probable duration of labor: that, on the one hand, they may not fatigue their patient, by urging her to unnecessary exertions at the beginning or during this stage of labor; nor, on the other, expose her to the hazard of being delivered alone toward the conclusion. Hence, too, we see the cause why the pains are more severe, cutting, and grinding, at the commencement, than they are toward the end of the first stage: at the beginning, the lips of the internal orifice are thick and rigid—consequently they make great resistance, and are in some measure torn asunder by the force of the pains; but as this stage advances, they continually grow thinner, and are more and more relaxed and softened, and consequently they make less resistance, and are more easily distended.

But, although the accoucheur during this stage can neither lessen his patient's pain, nor shorten its duration—and although he is absolutely forbidden to interfere in any manner with the progress of a purely-natural labor—yet his presence, so far from being useless, is very necessary; for that man is but little used to the exercise of the social virtues, who is ignorant of the influence which a kind and feeling conduct has upon his suffering patient: and to deprive her of it, is withholding a right for which nothing can compensate; and which, in her estimation, when freely bestowed, almost compensates for any want of skill and experience which she may discover. Our patient is entitled to all the consolations which a well-grounded assurance of a happy termination of her sufferings can afford; and this must be offered to her, from time to time, that she may profit by its encouraging influence. Yet we must beware that we do not betray her into false hopes, by any ill-judged promise of a speedy issue, when the termination, from the very nature of the case, must be remote. Nothing will so completely destroy the confidence of the patient, and all present, in our professed knowledge, as a labor to continue long after we have foretold its termination: truly, here, “hope deferred maketh the heart sick.”

From the knowledge which the foregoing pages will afford of the beneficence displayed by the God of Nature throughout the whole process of utero-gestation and labor, and of the admirable contrivances adopted by him to overcome difficulties and avert dangers, it will be evident that in all cases of strictly-natural labor, the duties of the attendant must be few and simple. Generally, indeed, no active assistance is necessary, until after the birth of the child; all that is required of the attendant being, that he should remain an observant though unofficial spectator of the process—ready to exert himself with promptitude and energy on the first appearance of any deviation from a perfectly-natural labor, or on the first accession of any alarming symptom; but at the same time he should be equally—nay, even more—ready to allow the changes necessary for the completion of Nature's object to proceed without interruption from any meddlesome interference of his. For no maxim in obstetric science is of more universal application than this, that all unnecessary assistance, rendered with the view of expediting the termination of a case,

or shortening the sufferings of the patient, is not only useless, but is in the highest degree injurious, and well calculated to defeat its own end.

Let it not for a moment be supposed that this declaration includes the admission that a partial acquaintance with the subject of midwifery is sufficient for the safe practice of the profession; for, although in nine cases out of ten, little or nothing is required to be done before the birth of the child, yet, in the tenth, such danger may occur, as can only be arrested by the most prompt, decisive, and judiciously-directed assistance; and no person knows, when called to attend a labor, what character that labor may assume.

Much accurate knowledge is necessary, to discriminate between the kind of cases in which assistance is proper, and to determine the time at which that assistance ought to be employed, as well as the proper mode of its application. It is this which distinguishes the scientific accoucheur from the ignorant charlatan; it is upon the possession and exercise of this important knowledge, that the future comfort, health, and even life, of many a parturient patient of every practitioner must depend. But on this subject we shall speak more particularly and in detail when treating of the other divisions of labor, in the practice of which, all the skill and knowledge which we can possibly attain, will not unfrequently be called in requisition.

In the manner, then, which we have described, the labor is to be suffered to go on without any interference; the pains continuing, gradually open the internal orifice of the womb, and force the membranes through it in the form of a purse, which, acting as a soft wedge, contributes in the easiest way to its further dilatation. Of the progress, the accoucheur may occasionally assure himself by examination, but as seldom as possible, at the same time taking especial care not to fret or irritate the parts by too-frequent repetition, or by any want of gentleness and caution. Although we must always introduce the finger during the accession of a pain, because the woman will then most readily submit, yet we must not usually attempt any accurate examinations until it remits, lest the membranes should burst, and the water be let out before the internal orifice be fully dilated—an accident which *always protracts labor*, and may convert a natural labor into a difficult one. Another argument against frequent examinations is, that it has a tendency to remove the natural mucus already secreted, and to inflame the tender lining of the vagina, so as to check the further secretion of this salutary discharge, which is intended by nature to lubricate and soften all the parts to be distended in the course of the labor.

The only reason which can be urged in favor of frequent examinations is, that it enables us to encourage the woman, by more frequent announcements of the progress of the labor, which, in some particular cases, if managed with great discretion, may perhaps be practised with advantage.

But, if it be necessary to be thus cautious in a careful and occasional examination, what terms shall we use, sufficiently strong to condemn as it deserves, the abominable practice of boring, scooping, and stretching the soft parts of the mother, under the preposterous idea of making room for the child to pass? "It is impossible," says Bard, "to censure this idle, indecent, and dangerous practice, too severely; it is always wrong, nor can there be any one period in any labor—the most easy and natural, the most tedious and difficult, the most regular and preternatural—in which it can be of the least use—in which, indeed, it will not unavoidably do great mischief, and ever betrays the grossest ignorance and mal-practice: for it will render an easy labor painful; that which would be short, tedious; and one which, if left to nature, would terminate happily, highly dangerous; and particularly it will endanger the laceration of the perineum, by rendering it dry, rigid, and inflamed, instead of leaving it soft, moist, and dilatable.

"I am the more solicitous," continues the same experienced writer, "to express myself fully and clearly upon this subject, because I know the practice which I am condemning, even now, to be very general in our country, particularly out of the large cities; and that we have to combat the prejudices, not only of the common midwives and less enlightened practitioners, but also of by far the greater number of their patients, upon this subject; and that, although we may convince the judgment of the more candid and unprejudiced practitioners, whether male or female, they will not be always suffered to execute it

unless they have considerable firmness and self-possession to resist the solicitations and importunities of the patient and her mistaken friends.

“The practitioner will not only be importuned on some occasions of a little delay, but he will be reproached with permitting his patient to suffer without assistance, and will often be threatened with application to others, and the loss of his reputation. I speak from experience. For these reasons, we must be firm, and resolved to withstand the entreaties which the distress of the patient may urge her to make; as we must also the dictates of vehemence and ignorance of the bystanders.

“Others may be impatient, but we must possess ourselves, and act upon principle. The event will justify our conduct; and, though there may be temporary dislike and blame, yet we shall have the approbation of our own minds, and ultimately secure permanent favor and reputation.”

Leaving nature, therefore, to her own unassisted and undisturbed efforts, the midwife is to encourage her patient, by appearing perfectly calm and easy herself, without hurry or assumed importance; by assuring her that, as far as can now be discovered, all matters are perfectly natural; by entering into easy conversation with her, and by encouraging her to do so with her friends. We should direct her to walk about the chamber, or from room to room; to sit or lie down, as she finds most agreeable to herself; and, if she can, to sleep between her pains, which some women are very apt to do. But she should not be allowed to remain continually in a horizontal posture until the neck of the womb is completely dilated. It is not uncommon to find the parts dilating slowly while the woman is in a horizontal posture, and for labor to advance with rapidity upon the woman's walking about or being seated on a chair, in which posture the weight of the ovum makes a greater resistance to the contractions of the womb, and thus assists in dilating the internal orifice. We should converse freely with the family, and not only leave our patient with her friends to pass her urine, but to manifest our own ease and confidence in the natural progress and happy termination of the labor; and thus excite the hopes and confidence of our patient, which, more than anything else, will tend to give strength and regularity to her pains.

Do not allow too many persons to remain in the room with a woman in labor. A great number of witnesses is always injurious, because they are in the way; they vitiate the air, and increase the heat; and they are generally women wanting in courage or discretion: some faint, and require that assistance which should be exclusively reserved for the patient; others amuse themselves by the recital of unfortunate deliveries, which they always misrepresent and exaggerate, so that the female becomes uneasy, loses her patience, or receives an impression which may exert an injurious influence. All useless persons, therefore, should be desired to leave the room, and only one or two intelligent assistants remain, such as a mother, sister, relation, or intimate friend, and the nurse.

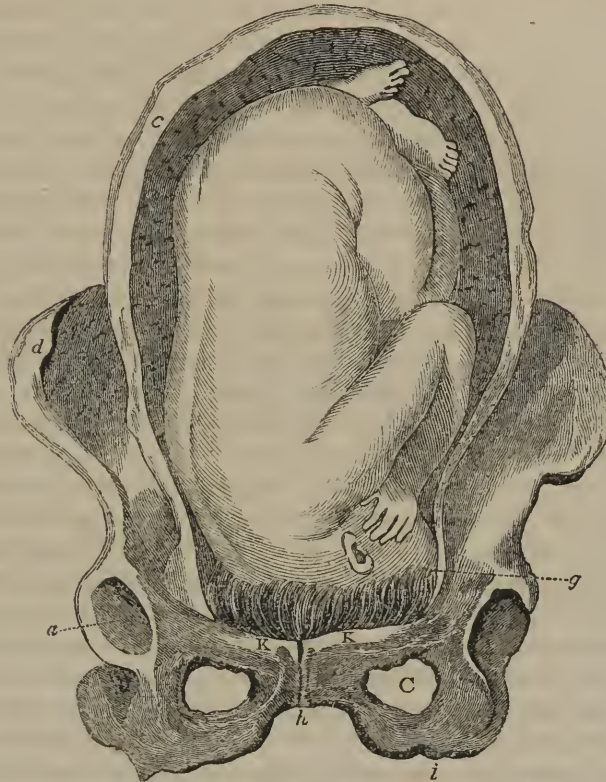
And here I must pause to allude to a common practice, which I consider very reprehensible and demoralizing, and which consists in the unrestrained indulgence of *light, frivolous, and obscene conversation*, unbecoming the dignity of all genteel society. Such conversation also has a depressing and injurious effect on the patient, as well as polluting the minds of all present.

At a proper season during labor, some refreshments, which should always be light and sparing, may serve to divert the attention; and every occasion of this nature should be embraced, to lessen impatience and protract expectation. Indeed, to gain time during this painful and irritable period, is an acquisition of no inconsiderable moment: for the time which uninterrupted nature requires to bring about the great changes which are now being accomplished, is always necessary; and when no morbid cause interferes, it is unquestionably true that women in general recover better after a rather slow labor than after one that is quick and sudden.

In this manner the first stage of labor is to be passed, the attendant now and then cautiously examining its progress; in doing which, when the internal orifice is sufficiently open to easily admit the finger, the head of the child may frequently be felt, and distinguished by its regular shape, smoothness, and hardness, through the lax membranes; and may be made another source of consolation and encouragement to the patient, by assuring her of it. But we must be very cautious how we predict a speedy termination of the labor; for many untoward circumstances, which we can not now discover, may arise during the

labor, to retard or even to complicate it, and we shall thereby lose the confidence of, as well as depress our patient.

The following figure shows the position of the fœtus when about to enter the superior strait of the pelvis :



(*a*, acetabulum ; *c*, walls of the uterus ; *C*, foramen ovale ; *d*, crest of the ilium ; *g*, the ear ; *h*, arch of the pubes ; *i*, ischia ; *K K*, brim of pelvis.)

VARIATIONS IN THE PERIOD OF THE RUPTURE OF THE MEMBRANES.— We have thus described the progress of natural labor prior to the rupture of the membranes, taking it for granted that the waters will not be evacuated until the os uteri is dilated to nearly its full extent ; but these two occurrences—the full dilatation of the os uteri, and the rupture of the membranous cyst—are not always found in practice to correspond with regard to time : for sometimes the membranes break before the os uteri is dilated to the size of a quarter of a dollar, while at others they protrude considerably through the vulva before they rupture—the head of the child having descended so low, as to occupy the cavity of the pelvis, and the os uteri having been widely open for a considerable time. Generally, however, the membranes burst when the mouth of the womb has become fully dilated, and the next two or three pains at most will usually expel the head through its orifice.

As the membranes are more or less rigid, and the mouth of the womb more or less yielding, so will be the length of time consumed previous to the discharge of the waters. When the os uteri is soft, and the membranous bag tough, it will probably be long before it ruptures ; but when the os uteri is rigid, and the membranes are thin and tender, they generally break early. The period, therefore, at which the membranes rupture, will not only depend upon their own toughness or tenuity, but it will also be regulated by the pressure which the edge of the os uteri exerts on them while they are protruding through it. The more lax the os uteri is, the less it compresses the extended portion of the cyst, because it easily distends before the power operating from within. But if the os be rigid, the pressure is great, and the inner margin closely and strongly embraces the tense membranes all around, producing by its very resistance a deep circular groove, and thus exposing the bag to premature laceration.

It is always desirable in practice to preserve the membranous bag entire as long as possible, or at least until it has *performed the whole office destined for it by nature*, namely, the dilatation of the os uteri, the vagina, and somewhat of the external parts. When the membranes appear externally to the vulva, or indeed before, we may suppose that they have then effected all the good that can be expected from them; that their remaining longer entire may possibly be retarding the labor; and we may, in that case, venture to rupture them: which we may do by pressing the finger against them during a pain, when the waters gush out copiously. But we must ever remember that it is one of the first axioms to be learned in obstetric practice, *not officiously or unnecessarily to destroy the cyst, or bag of waters*, so long as any advantage can be obtained by its dilating powers. When, therefore, the os uteri is fully dilated, and we feel within the vagina a large bag of waters, which appears to be retarding the labor, it should be ruptured, and we shall find that the labor will be greatly expedited by it; the patient will feel great relief, and the character of the pains be very much improved.

As soon, then, as the os tinea is fully dilated, particularly if the membranes break, is the time, by a very careful examination, to ascertain more fully the presentation. If the posterior fontanelle or crown can be discovered toward (or rather before) the centre of the pelvis, and, tracing the longitudinal suture, we can discover the anterior fontanelle backward and a little to one side, and the ear can be felt under and a little to one side of the pubes, we may be certain that the presentation is perfectly natural. And I would advise *every young practitioner*, on every occasion, carefully and deliberately to make this examination; as much with the view of acquiring the art of ascertaining the presentation with accuracy, as for present information, which will be of great service to us in preternatural and many difficult labors: for, although we may not at first perfectly satisfy ourselves, which will frequently be the case, we are not to make ourselves uneasy, so long as we are sure it is the *head*; as there are few or no positions of the head, which nature, left to her own efforts, in a well-formed pelvis, will not rectify or overcome.

SECTION III.

THE SECOND STAGE OF LABOR.

THIS stage of labor commences with a full and complete dilatation of the orifice or neck of the womb, and ends when the child's head has sunk so low through the pelvis, as to rest upon and distend the external soft parts of the mother, forming the *perineal tumor*. The discharge of the liquor amnii or waters, as we have before observed, usually takes place at the termination of the first stage of labor; sometimes, however, it is protracted more or less into the second stage; but whenever it occurs, it is usually followed by a respite from pain, of rather longer duration than had been experienced for some time before; yet, when the uterine contractions return, they are generally increased, both in length and severity: they are more forcing, and are attended with bearing-down efforts of greater or less violence.

So long as the grinding pains continue, there is not much prospect of a speedy termination of labor; but as soon as more forcing pains commence, caused by renewed and more powerful contractions of the uterus, the patient will make a peculiar and very different outcry from the preceding, or perhaps she expresses the acuteness of her pangs by loud and shrill cries, which are sufficient sometimes, as a writer remarks, "to make the ears ring," or by deep, stifled, or suppressed groans, calculated to make the hearer tremble; in other cases, the pain is less, of short duration, and soon forgotten. The patient forces down with every pain, which are now very severe, and follow each other in quick succession, with great straining and commotion of the whole system. When these symptoms begin, and the character of the pains becomes thus changed, hope is infused, and fresh spirits instilled, which sustain her powers; the sufferings of the woman are rendered more tolerable, and she experiences an increase of resignation and patience.

At the time the head is passing through the os uteri, severe rigors frequently occur—not from cold, as one unaccustomed to observe them might suppose, for the surface is usually quite warm—but from some agitation of the nervous system. It occurs more frequently, and with most violence, in persons of a very nervous temperament.

If an *internal* examination be made at the beginning of the second stage of a natural labor, we shall find the vagina feeling as though it had been dilated; its walls will be found ungous and flabby, and thus prepared to yield to the pressure of the head. The head itself will perhaps be perceived at the upper part of the pelvis, filling it more or less completely—descending with each pain, and receding at its conclusion; but the advance exceeds the recession, and the excess marks the rate of the progress of the labor. As the labor advances, the head may be felt on the floor of the pelvis; here it sometimes meets with considerable resistance, which is overcome by the spiral movement in the mechanism or phenomena of labor before described, to which we refer the reader.

It is during this stage of labor that the child's head—which enters the pelvis diagonally, with one ear toward the pubes, and the other toward the sacrum—in its descent gradually turns, so as to throw the forehead into the hollow of the sacrum, the vertex to the pubes, and the ears to the right and left sides of the pelvis. And it is the various obstacles which may occur to prevent this favorable turn in the position of the child's head, which protract this stage of labor, and sometimes occasion it to be the most tedious of any.

But, so long as the parts are relaxed, moist, and cool, with a well-formed pelvis, and not a hydrocephalous or dropsical head, it is a natural labor, and must be left to nature. The cases which may require assistance we shall speak of under *difficult labor*. The difficulties or little delays which may arise from slight deviations and disproportions in the relative size of the head and openings of the pelvis, or some irregularity in the shape, or a little deviation in the presentation, are all circumstances which nature, when left to herself, will generally vary so wonderfully, as to adapt the one to the other in every stage or progress of the labor. The *imperfect ossification of the bones* in the head of the human fœtus, and the loose manner in which they are connected by membranes, is the wise provision which nature has made for overcoming these difficulties and facilitating delivery: where the head is large, or the pelvis narrow, the bones, being subject to great pressure, ride over or overlap one another, diminishing the size of the head as it is forced through the brim, and sometimes rendering its shape very long and pointed, with a considerable corrugation, tumor, or swelling, at the presenting part.

THE CHARACTER OF THE CONTRACTIONS OF THE SECOND STAGE.—This differs widely from that which is observed in the first stage—so much so, that an experienced attendant will form no inaccurate judgment of the stage and progress of the labor, by observing the patient's manner, and hearing her cries. The pains in this stage are much stronger, and their duration is more protracted; while the interval of ease between each is longer and more perfect; they are accompanied by very forcible bearing-down efforts, and the patient expresses her sense of pain in a much graver tone of voice, or perhaps bears them in silence. While her sufferings are greatly increased, she is much more patient and resigned under them; when a pain threatens, the sufferer prepares for a severe struggle: she elings for support to the nearest object, and, with the view of exerting the propelling powers of her system to the utmost, she takes a deep inspiration, inclines the chest upon the abdomen, and pushes the feet against some fixed point. The condition of the diaphragm is changed from an arch to a plane, and presses with great power upon the fundus uteri; and the powerful muscular walls of the abdomen are called into action, and press upon it anteriorly, while the uterus itself makes a strong contractile effort in conjunction with the other powers mentioned, to force the contents through the pelvis. During the agonizing efforts of the patient, the respiration ceases, which causes an arrest of the circulation, by which the vessels of the head and neck become congested, the surface florid, and the face sometimes purple—the eyes bright and prominent, the heat of the skin greatly increased, and a profuse perspiration ensues.

If this or the next stage (in which the character of the pains is similar) be much prolonged, the patient will commonly feel heavy and sleepy, and doze between her pains, to be awakened by their approach,

only to realize renewed sufferings. This dozing between the pains is partly the result of fatigue, and partly (perhaps principally) from the congestion about the face and head, the consequence of suppressed respiration during the pains.

Under ordinary circumstances this should excite no uneasiness : it is a merciful provision of the Creator to obliterate, part of the time, the patient's consciousness of sufferings, and thereby refresh her for the ensuing pain. But if this coma should be excessive, and accompanied by severe pain in the head, we must be on our guard against an attack of convulsions.

DURATION OF THE SECOND STAGE.—The duration of this stage of labor is regulated by a variety of circumstances—as both the energy of the mind, and the power of the propelling agents ; the relative size of the head and pelvis ; the condition of the membranes of the ovum, and soft parts of the mother. In first labors, this stage *may* continue even ten or twelve hours ; while in other cases, and especially where the passages have been previously dilated by child-bearing, and where the uterine action is energetic, it may be concluded in less than an hour. Sometimes, indeed, as soon as the waters are discharged (where the pelvis is large, or the head small, and the parts well dilated), the head falls by its own gravity through the pelvis, and delivery succeeds immediately, even before the patient can be removed to the bed !

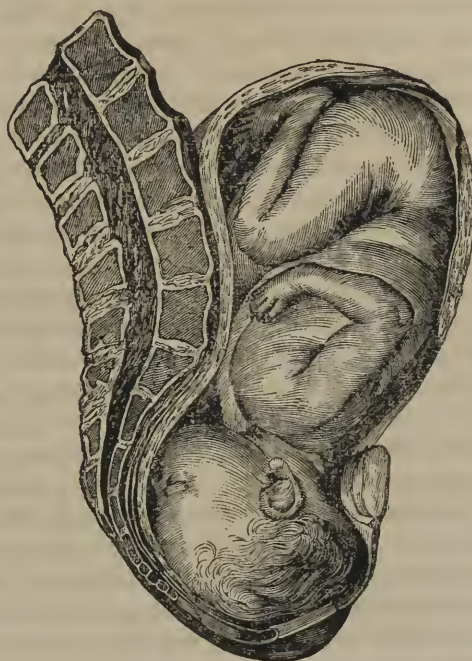
When such a state of the parts exists, the patient should be placed in the horizontal position toward the conclusion of the first stage. In such cases the child is usually covered with the membranes : this is termed a *caul*, and very superstitious notions are held by some people respecting it. Captains of vessels have taken them to sea, in the full confidence that their *ship could not sink*, nor themselves be drowned, while they possessed them ! As much as forty pounds sterling (or two hundred dollars) have been given for them in London. But at length, a sea-captain being found drowned *with a caul in his pocket* shook the faith of some.

It is a commonly-received opinion, especially in the country, that the child should be born speedily after the rupture of the membranes and discharge of the waters. This opinion is founded on sound observation, and was probably first promulged by those who were engaged in the care of breeding cattle, in which this is the usual course and order of parturition ; and I believe it would much more frequently happen in the human species, if the progress of the labor were as little disturbed or interrupted as in the lower order of animals. But practitioners are urged by the distress and suffering of those whom they are attending, by the concern of friends, by a persuasion of its propriety and advantage, and sometimes perhaps by their own impatience, to break the membranes before the os uteri is dilated. Now nothing can be more clear than that, if these are ruptured, either spontaneously or artificially, before the os uteri is dilated, *the child can not follow speedily*. Moreover, by this premature rupture of the membranes, we often defeat our very purpose, and, by disturbing, protract instead of hasten the labor.

During this stage of labor, women are less inclined to move than during the first stage ; still, they are not to be confined to one posture, but indulged, and even encouraged occasionally to rise from the bed, to walk about, and to endure some pains leaning over the back of a chair, supported by their friends, or kneeling at the side of the bed. I have often been agreeably surprised at the sudden and happy effect of this change of posture ; after the woman has perhaps been confined for hours to a horizontal position, and wherever the progress of labor appears to be arrested, this change should be tried, and we shall often witness its salutary effects.

During this stage, also, the impatience and apprehensions of the patient are frequently much excited ; the pains, which are desired, yet dreaded, return at short intervals, and are strong and bearing ; she longs, and hopes, and strives, for a speedy termination of her sufferings ; and it requires much prudence and no little management to *check her impatience*, while at the same time we *support her hopes*. Our principal aim should be, especially when this stage is somewhat tedious, to soothe her sufferings, to calm her fears, and to excite her hopes, by encouragement ; above all, must we carefully avoid alarming her by *whispering*, or by any appearance of mystery and concealment ; we must not appear anxious, or too busy, in any apparent or real efforts to shorten the labor.

When the head presses on the perineum, and, by dilating the soft parts, forms a tumor, this stage is over, and we should place the patient in a suitable posture for delivery. The subjoined representation indicates the position of the fœtus at this period of labor:—



SECTION IV.

THE THIRD STAGE OF LABOR.

WE have said that the third stage of labor begins at the time when the head of the fœtus, having sunk so low through the pelvis, begins to *rest upon and distend the soft parts of the mother*, and *continues until the birth of the child*. When the head thus presses on the perineum and soft parts of the vulva, the vertex presents at the external orifice, and the forehead and face occupy the hollow of the sacrum.

There is, about this period, great pain in the lower part of the spine or back, owing to the pressure of the head against the sacrum, which is always a favorable symptom to announce to the patient, and which may encourage her in the great excitement and tremendous efforts which she now makes with much power and effect. During this great struggle, the face often changes its expression remarkably—so much so, that her friends scarcely recognise her.

In this position the fœtus continues to advance, until the perineum is stretched and distended into the form of a large protuberant tumor, and the external orifice so far dilated, as to suffer the head and body of the child to pass through without injury.

At this period of the labor, when the head is distending the perineum and dilating the external orifice, both the sufferings and the exertion of the patient, which we described in the second stage, reach their greatest height. The vertex or crown first appears externally, and, as it descends lower and lower, the labia or external parts become opened, the anus dilated, the perineum distended, heated, and very much thinned; and yet it is beautiful to observe how *cautiously* (so to speak) and how *securely* the process of

expulsion is effected. Adequate expulsive force is called into action, and if that force were continuous, nothing could save the patient from injury ; but each pain is just long enough to gain upon the advance made by its predecessor : and the head, detained for a few moments at its farthest point of advance, then recedes ; and this is repeated until the perineum is completely softened, and the os externum fully dilated. Nor is this all : the resistance offered by the perineum carries the head forward, so that its lowest point shall press against the outlet ; and by the time the perineum yields, the orifice becomes sufficiently wide to secure the proper direction of the head in its passage through the vulva.

At this crisis, the head will be nearly expelled at every pain, then recede and be again buried by the labia closing around it. "Here, again," says an author, speaking of this part of labor, "we can not help remarking the beauty of Nature's ordinances ; it is impossible, indeed, to contemplate a single provision even of the minutest character adapted to the exigencies of labor, without being fervidly and awfully impressed with the extent of that wisdom, power, and beneficence, which establishes the laws of Nature, and controls her operations."

This retrocession of the head, then, is wisely designed to protect the perineum and soft parts from rupture and laceration, and which it does protect, in a manner which the hand of man can never accomplish. Were the child to be suddenly forced through the passage, it might prove fatal to it, as well as to the mother.

At the latter part of the third stage, the pains are often what are called *double* ; that is, they succeed each other so quickly, that a new one commences before the former has quite terminated. At length, the head of the child, greatly compressed, or perhaps swollen, is forced partly through the external parts, and does not recede when the pains cease. Finally, the force of the pains conquers all resistance, and, with a throe of agony, or a wild, piercing shriek, *the head is expelled*, after which there is a short rest, equal to the length of two or three pains. When the head is on the point of passing, the contents of the rectum are commonly forced out. After the head is born, the woman feels, as it were, completely relieved from the distending force, and consequently from the violent agony which she endured : and usually expresses herself in some strong sentiment of gratitude and joy, or perhaps gives vent to her feelings of delight in a flood of tears.

Under all states of the system, the sudden removal of intense pain brings with it a sensation of positive pleasure ; and in no case is the instantaneous transition from extreme misery to actual joy more conspicuous than immediately on the delivery of the head, particularly in a first labor. After a short respite, the uterus resumes its action, for the purpose of completing the delivery. When the head is born, the shoulders are within the pelvis, with their long diameter parallel to the shortest diameter of the pelvis ; but they can not be born in this position : hence they make a turn within the pelvis, as did the head, which throws one shoulder into the hollow of the sacrum, and the other to the arch of the pubes. As the shoulders make this turn, the head also may be seen to turn, so that the face, which looked toward the sacrum when born, now looks toward the right thigh of the mother, or nearly in this position. The body of the child, then, is expelled sidewise through the outlet, with one shoulder and arm distending the perineum, and the other insinuating itself under the arch of the pubes. One pain is sometimes sufficient to make this turn, and to expel the shoulders ; at other times, several are necessary. In a very short time after, the breech is expelled ; then the legs and feet either immediately pass out, or remain a minute or two in the vagina, and are expelled by its contractions.

As soon as the head is expelled, introduce the end of your finger into the mouth, to clear away the mucus, if any obstruct its breathing, and examine the neck of the child, to feel if the umbilical cord is coiled around it : if so, draw a little more of it down, so as to form a loop, which can be slipped over the head, or through which the shoulders can pass. The child will frequently cry very soon after the head is born. As the body is propelled through the outlet, we must support it with our hand, that the bed-clothes may form no obstruction to its egress. After birth, as soon as respiration is established, which is known by its cries, the umbilical cord should be divided. Take a piece of tape-string or several folds of strong thread, and tie securely around the cord about an inch from the navel, and then separate

it with a pair of scissors. Never tie the cord under the bed-clothes ; we may draw the child into view without exposing the mother, and we must always see what we are doing. Some, in trying to be over-delicate, by tying the cord under the bed-clothes, have cut off the child's finger or penis with the cord, as recently happened in this city ! The delicacy of the accoucheur, however, is a poor apology to the child, as he grows up, for the loss of one of his members. There is such a disposition in the cord to bleed after having been divided, that in general I think it best to tie it twice, at or near the same place, and which I did in the last case I attended.

The time occupied by the passage of the child through the external aperture of the pelvis, is as various and uncertain as the duration of either of the preceding stages. Sometimes the same pain, under which the membranes burst, expels the head, and perhaps the body also ; at others, one, two, or even many hours of wearisome suffering, are endured before the head emerges. The length of time after the birth of the head before that of the shoulders and body, is also somewhat various : sometimes scarcely a minute intervenes ; at others, a considerable time elapses ; usually, however, the child is entirely expelled within about five minutes after the head has passed.

"It must be forcibly impressed on the mind of the attendant, that, notwithstanding her great anxiety at this critical moment, when the body of the child is half expelled—whatever solicitations there may be from the patient or her friends, or whatever her temptations may be to interfere—nothing more should be done than to *support the child*, and *remove obstructions* to its free passage. There is one remark, however, I would here make, on leaving the child in every case to be entirely expelled by uterine action alone : although, generally speaking, no assistance whatever should be given, yet I have known several instances where *the child was probably lost by adhering strictly to this rule*, where uterine action was tardy in returning after expelling the head. When, therefore, in three or four minutes after the head has been protruded, the pains do not return—particularly if the face of the child be observed to be *very livid*, or, still more, when the child *makes efforts to breathe*—we should give gentle assistance, so as *merely to excite uterine action* ; but the moment that we notice the body making the least progress, we must desist, and leave the expulsion to be effected by nature, as before stated. These means, it is carefully to be recollected, must only be employed in such cases as described : they are chiefly met with when the child is unusually large, or the labor protracted."

But, whatever difference there may be in the duration of any of the stages of labor, I wish especially to impress upon all students of midwifery that labor must always be regarded as natural, and consequently left wholly to the efforts of nature, where from the beginning we find the os uteri lax, soft, moist, thick, cool, and not tender on pressure ; where we find, also, the vagina soft, moist, relaxed, and cool, and the perineum distensible ; the pelvis well formed ; the head presenting in the usual manner, and not dropsical ; and the contractions of a moderate strength : *in all such cases, whatever be the duration, I repeat, while these symptoms continue, it is positively bad practice to interfere in any way. The labor should be left wholly to natural efforts—ever remembering that, in all such cases, Dame Nature is the best accoucheur in the world.*

SECTION V.

THE FOURTH STAGE OF LABOR.

THIS stage of labor includes the *detachment and expulsion of the placenta*. This is as necessary and as natural a part of the process of labor as that of the delivery of the child ; and the efforts of nature, without the intervention of art, are in most cases as fully able to accomplish it. All unnecessary interference is equally pernicious here as in the delivery of the child. In some cases, the contractions which expel the child, also expel the after-birth ; and, in the generality of instances, it is either partially or wholly

detached by them, and remains in the uterus or vagina, whence it is soon expelled by the natural powers alone, or aided by very gentle extension with the cord. The interval which elapses, after the expulsion of the child, before the uterus again actively contracts to expel the placenta, varies considerably—usually from five minutes to an hour—according to the fatigue which the organ has previously undergone. When this interval (whatever it be) has elapsed, the uterus again contracts, but much less forcibly, and, by one or two pains, the connexion between the placenta and uterus is severed. The now-useless appendage is extruded into the vagina, and by its contractions it is expelled with a gush of blood or clots. *If the placenta be not thus expelled by the powers of nature within an hour, it is a retained placenta, of the treatment of which we shall speak hereafter, as I wish here to present natural labor and nothing else.*

I may here add that it is remarkable the fortitude and resignation with which women bear the agonizing throes of child-birth, and the rapidity with which the system recovers from its lengthened suffering, and health and strength return. This must likewise be regarded as one of Nature's mercies; but there is this great difference between the pain of labor and all other pains: the latter are unnatural, and dependent on morbid actions; the former is natural, and inseparably connected with the performance of a healthy function.

I wish to impress on the mind of the student the very great importance of carefully and minutely studying the subject of natural labor, if he desires ever to understand the practice of midwifery; it must be studied not in books only (however well they may be written), but also at the bedside of the patient. He should make himself perfectly familiar with natural labor for two especial reasons, among others:—

1. Because *natural labors are more frequent than any other.* Madame Boivin, of France, reports that of 20,517 children born in the institution over which she presides, 19,810 were head presentations; and Professor Moreau that in 82,164 labors which he noted, the head presented 81,806 times. It is generally admitted that at least two thirds (and some say four fifths) of all head presentations are natural labors, if they are not rendered difficult by officious interference.

2. Because *natural labor forms the standard by which all other labors are measured*; and unless we understand the rule well, we can never understand the exceptions, as all other labors must be regarded.

Such is the progress of natural labor, which should be most carefully and thoroughly understood by all persons who take charge of a parturient woman, and to which, if it were possible, they ought for a considerable time to confine their practice; for they only who are conversant with natural labor, and understand in all their minute circumstances the progress and resources of Nature, can be qualified to assist her in such labors as are difficult and preternatural. Nor can it be too frequently repeated, nor too strongly impressed upon young practitioners, that in a natural labor they have nothing to do but to calm their patient's fears; to fortify her with patience; to regulate her conduct, her diet, and her evacuations; to check all improper efforts; to prevent the accidents of premature and hasty delivery; to remove obstructions, to receive the child, to tie the cord, and to deliver the after-birth, in the most cautious manner. There are frequently, however, many circumstances which may occur to convert a natural into a difficult labor. These are sometimes the result of causes over which we have no control; but more frequently they are the consequence of our own or others' erroneous conduct in the beginning or during the progress of labor. Upon this subject that eminent professor of midwifery, Denman, remarks: "It would be unpardonable to make an assertion which is not supported by experience; but I am fully convinced that in the far greater part of really difficult labors to which I have been called—and I must not conceal the truth on this occasion—many of those which have been under my care originally, were not of that description from unavoidable necessity, but were rendered such by improper management in the commencement or the course of labor."

Such a confession, from a man of Professor Denman's experience and unquestionable knowledge, is of inestimable value; and if duly reflected on and constantly remembered by the young and inexperienced, will preserve the lives of very many women and children, save themselves many painful recollections, and do more to improve their knowledge and usefulness, than years of careless and inattentive practice.

CHAPTER V.

DUTIES OF THE ATTENDANT AT A LABOR.

SECTION I.

GENERAL REQUIREMENTS OF THE ACCOUCHEUR.

LET us now turn from the description of the phenomena of natural labor to *the duties of the attendant during a labor, and the mode of managing it.*

And first, let all, especially young practitioners, remember that when they are called to take charge of a woman in labor, they are not generally called to a sick person, and they are not necessarily either to prescribe medicine or offer artificial assistance of any kind ; but that they are summoned to witness a natural function of the female system, for which, in all ordinary cases, nature has made as ample provision as for the passage of the fœces or urine : but as, in these functions, nature sometimes fails, and it becomes necessary to administer a cathartic or an injection, and introduce the catheter, so likewise nature sometimes fails to perform the function of parturition regularly, and requires to be assisted by art. To know when and how to assist nature in such circumstances, is what distinguishes the well-instructed accoucheur from the ignorant charlatan. Most of the modern improvements in the treatment of difficult, preternatural, and complex labors, which we shall lay before the student, have been discovered by a more correct appreciation of the natural powers to effect expulsion ; and the great improvement in the management of natural labor which we shall inculcate, will be *non-interference*.

There is, in truth, but very little for the practitioner to do, if the case be one of purely natural labor, where all its attendant circumstances transpire favorably ; and, under such circumstances, there is very little which he need take with him, except *patience, gentleness, and good-humor* : and therefore the old practice of carrying with him certain medicines and instruments is strongly to be deprecated, because, to say the least, it is a needless exposure of himself to the temptation of administering the one, or of using the other.

In the management of the most natural labors, much judgment and caution are required in our interference, or we shall convert the simplest case into a laborious or even a dangerous one. Ill-directed measures always produce mischief. There is no one circumstance that so largely and so certainly contributes to divert Nature from her proper course as the persuasion that she can always be assisted by art. It is this impression which prompts the constant employment of all those ill-directed manœuvres of the ignorant attendant ; and, unfortunately for the best interest of the pregnant woman, it requires more knowledge *not to be officious* than falls to the share of many of those who pretend to practise midwifery. Nor is this unfortunate prejudice confined to the more ignorant but would-be-thought-scientific meddlers in midwifery, but it has also a powerful hold on the popular mind. It is a common belief that great and constant benefit can be derived from the attendant, especially during the active state of pain ; and this feeling is but too often encouraged by the ignorant and designing, to the injury of the patient, and the disgrace of the profession.

In a perfectly natural labor, the active duties of the attendant are very limited indeed ; it is only when there is some deviation from a natural labor, that the active duties are called in requisition : but to be

able to discriminate between the two conditions, requires a thorough knowledge of all the phenomena in which a healthy natural labor consists, and this can only be known with certainty by those who are well experienced in the principles and practice of their profession.

To conduct labor with safety, the practitioner should be intimately acquainted with the order and succession of its phenomena; to be able to decide when certain of them are wanting, or when others are in excess; to estimate the relative or positive importance of each; the force and effect of each pain; the necessity of preserving or wasting the waters; the degree of resistance which the os uteri or external parts may offer; the situation of the former as regards the presenting parts; to ascertain precisely the presentation; the mode of rectifying any error in the presentation, and the proper time to do it; the capability of regulating it with the greatest advantage to the patient and to the infant; and, "though last, not least" in importance, he should be able to pursue a firm, candid, and feeling conduct, throughout the whole scene—that, on the one hand, he may not be betrayed into the indiscretion of premature interference; nor, on the other, suffer the golden moment of interference to pass, by vacillation and indecision.

When we are called to a person supposed to be in labor, we should obey the summons as soon as possible, and that for two reasons: in the first place, our promptness will give the patient a favorable impression of our assiduity and attention to her welfare; and, secondly, it will give us the earliest opportunity of rectifying any error in the presentation, or of administering any relaxing medicine which the case may happen to need.

First, after our arrival, inquire of the nurse how long since the pains commenced; what is their character; whether she has had what nurses call a *show*—that is, a discharge from the vagina of mucus streaked with blood; whether the waters have broken; whether it is a first child, &c. The answers to these questions, from an intelligent nurse, will afford us some good general idea of the state of the labor. When we are introduced into the lying-in chamber, after a little general conversation, we should make a vaginal examination; or, which is better, proceed directly to the bed, and merely say, as you begin to examine the patient, "Allow me to see if all is right;" tell her that we wish to know at the beginning whether the child presents right, or whether it is a cross birth; and that it is for this purpose, we wish to examine in the lying-in room.

SECTION II.

EXAMINATION OF THE FEMALE.

HAVING thus obtained the patient's consent, she should be placed in a proper position for examination. Some recommend us to examine in the standing attitude; others, that she be laid on her left side, near the edge of the bed, with her limbs flexed; but the position which I esteem most convenient, and which affords the greatest facility to the hand, is the following: Let the female sit on the very edge of the bed, with her feet on stools, her body bent forward, and the limbs somewhat extended; or she may be placed on a chair in the same position. Now call for a napkin, and some sweet-oil, lard, or other unctuous matter, with which to lubricate the finger, previously warmed, which should never be neglected, for two important reasons: first, the finger, when lubricated, is not so liable to *fract* or *irritate* the soft parts during examination as when introduced dry; secondly, the finger should be lubricated, to prevent the chance of *innoculation* with any morbid secretion, should the patient be laboring under any venereal affection,* which is not uncommon, especially in large cities, with perfect innocence on the part of the woman. Being now prepared for an examination, we must have distinctly before our mind all the

* A physician from a distance lately applied to me for advice: he had been thus innoculated with venereal disease, in consequence of examining a female during pregnancy, while he had some excoriation of the skin on the same finger. Hence the importance, not only of lubricating the finger, but of washing well with soap and water subsequently.

objects for which we examine, and each should, as far as possible, be ascertained before the finger is withdrawn.

The objects for which a first examination is made are the following: 1. To ascertain whether the woman is pregnant. 2. If pregnant, whether she is in labor. 3. If in labor, what is the presentation. 4. How far the labor has advanced. 5. The formation of the pelvis. 6. The state of the soft parts. 7. To direct our future conduct. 8. To encourage the patient and her friends.

1. TO ASCERTAIN WHETHER SHE IS PREGNANT.—It may be thought superfluous to examine whether a woman be pregnant, who has sent for you because she considers herself in labor; we may suppose that she must at least be in the latter months of pregnancy. But instances are of daily occurrence in large cities which prove the fallacy of this mode of reasoning; and professional persons have been in attendance for days (and in some cases even for weeks) on a woman supposed to be in labor, who proved not even to be pregnant: and have thus exposed themselves to the censure, the quizzical inuendoes, and sarcastic ridicule, of all who hear of their exploits. And we are all liable to be placed in the same predicament, if we rely upon the woman's assurance that she is pregnant, or do not know enough to satisfy ourselves by examination—or, knowing, neglect to make it. Dr. HASSELL, of this city (a physician of the reform school, who has devoted much attention to midwifery), has just told me that he was recently called to a labor in great haste. When he arrived, he found that the nurse had placed the woman in a properly prepared bed for delivery, and was in the greatest alarm and excitement, lest the doctor should not arrive before the child was born, as he was not at home when the messenger first arrived. The nurse and the lady both stated that the *waters had broken several hours*, and that it could not now be long before the child would be born, for that she was never very long in labor, and that *this was her fourth child*. The nurse had arranged everything in neat order: a bandage for the lady, the scissors, the tape, and all necessary, was in its place. The doctor made an examination, in order to ascertain the state and stage of the labor—when, lo and behold! he discovered that the woman was not pregnant. It had been a serous or watery tumor of the womb, which had enlarged the abdomen, and finally burst, which she regarded as the waters. The surprise of the lady, the nurse, and the friends, at such a termination of the labor, may be better imagined than described—the woman constantly reiterating, “Why, I have *felt the movements of the child* these four months or more! I have *had children before!*—is it possible that I can be deceived like this?”

Many unhealthy actions will cause the abdomen and even the womb itself to swell, and simulate the distended appearance of gestation; and the consequent spasms of different muscles (when their action is interfered with by the enlargement) will pretty closely imitate, as to sensation, situation, and severity, the early pains of labor. While this gradual enlargement is going on, the woman will find no difficulty in persuading herself, or in being persuaded by others, that she is pregnant; and when the spasmodic pains set in, she will as readily conclude that labor has begun. Perhaps the lady is a perfect stranger to the attendant, and he has no means of knowing the true state of the case but by examination. And if he does not know enough to distinguish the occasional swellings of the abdomen from pregnancy, he will probably waste his time for many days, till some one better informed is called in, and he finds himself subject to ridicule and sarcasm.

Swelling of the abdomen, arising from pregnancy or from other causes, may be distinguished in the two following ways: first, by placing the hands on the bare abdomen. If it be disease, simulating pregnancy, we shall probably find the abdomen tympanitic, or inflated with flatus or wind, pent up in the intestines—perhaps enlarged from fluid effused in the peritoneal cavity, or from the presence of a solid tumor.

Now if we have made ourselves familiar with the feel of the abdomen during the latter part of pregnancy or the commencement of labor, we shall readily distinguish that it is softer or harder, larger or smaller, more diffused or more circumscribed, than in true pregnancy; that it is not of the same shape—perhaps it is irregular on its surface—does not occupy the same position—and, above all, that it does not possess that peculiar *springy elasticity* which so strongly characterizes the impregnated womb at or about the end of the term of gestation.

Secondly, if we are not perfectly satisfied (or perhaps with a view still further to confirm the above means of diagnosis), we should introduce the finger within the vagina up to the os uteri: if it be a case of simulated pregnancy, the orifice of the womb will be found not only closed, but undeveloped; the neck of the womb will not be expanded; and the womb itself, on pressing it with the end of the finger, while the other hand is placed on the abdomen where the fundus should be, will be found small, light, and moveable, if it be not diseased; and if it is diseased, and enlarged, it will be found to be much less than the gravid uterus at full term. But, on the other hand, if the patient be pregnant, and near the end of her time, we shall find the os fully developed, the neck expanded, and perhaps the mouth somewhat open, so that we can detect the fœtus within or through the thinned walls of the neck. If we attend to these things, we can always be certain whether a female is pregnant, who fancies herself in labor, or to have arrived at her full term.

2. We examinè, to learn whether, if pregnant, she is in *labor*, or whether her pains are what are termed false or spurious pains. For the mode of doing this, and the treatment, when the pains are spurious, I refer the reader to the section on "false pains," in the chapter on the "signs of approaching labor."

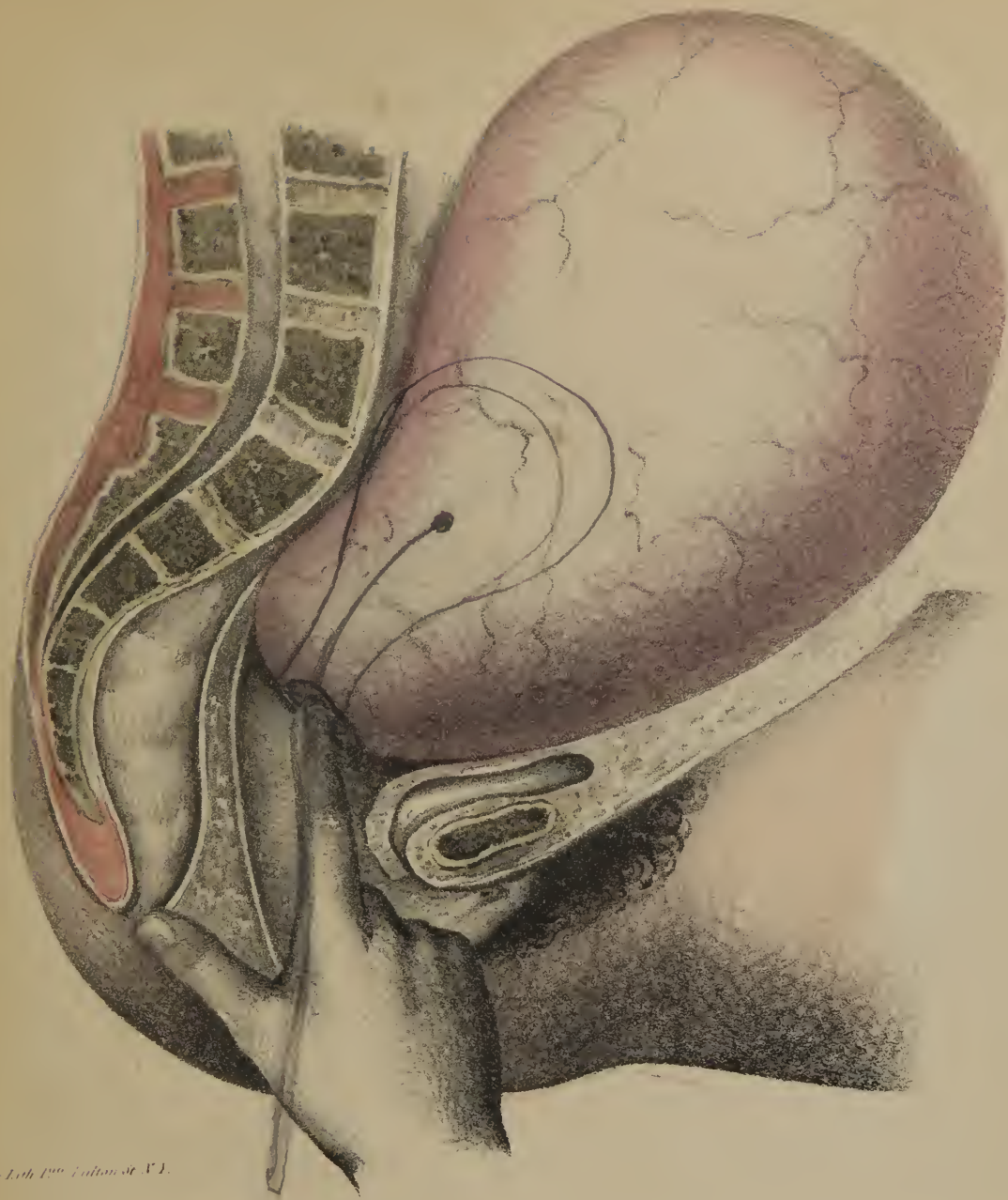
3. If the patient is pregnant, we examine, to ascertain the *presentation*.

Great caution is necessary in making these examinations, lest we break the membranes, let out the waters, and cause a protracted or difficult labor. We should introduce the finger during a pain, but should not examine very minutely until a remission takes place; when the membranes become lax, the presenting part descends, and if the os be open, the presentation may usually be recognised, if examination be skilfully made.

Carefully pass up the index or middle finger (some use both, previously oiled, and warmed if it be cold weather) into the vagina, until it penetrates the os tincæ, which may usually be known by its hardness and ring-like circle of more or less diameter. Let the finger be passed through the ring into the uterus: if a pain comes on while the finger is within, let it remain perfectly still until it is over; then press the finger back, and pass it around the presentation, in order to ascertain what it is. The head may be known from every other part that can present, by its greater hardness to the touch, by its greater rotundity, by its sutures, and by its anterior and posterior fontanelles. The face may be distinguished from the breech by the forehead, and by its general features: especially the mouth may be distinguished from the anus, by its larger size, and by the tongue. (Remember, that in pointing out these distinctions, I take it for granted that the attendant is present from the first, and not that he is called in to repair the blunders of those who have preceded him, and who, by rude and improper handling, have so irritated, inflamed, and bruised the parts, that they are swollen out of all shape, so that it has become impossible to distinguish one from the other. In such a case, it may be impracticable to ascertain the presentation without introducing the whole hand into the vagina or the womb.) The breech may be easily recognised by the two globules of the nates, with a cleft between them, and the anus within the cleft, and by their shape, softness, and elastic feel, compared with the head. The parts of generation above the cleft, in the male especially, are easily distinguished, the scrotum of which becomes very much swollen as the labor advances; and generally the finger will be soiled with meconeum, which usually passes freely in breech presentations. The shoulder may be distinguished from the hip, by its smaller size, and by the axilla or arm-pits; and the ribs, by the clavicle, scapulæ, and the arm, which is so very much smaller and more moveable than the thigh. The foot may be known from the hand by its greater thickness and length, by the projection of the heel, by the shortness and evenness of the toes, and by the great toe being on a line with and close to the rest, while the thumb is shorter than the fingers, and at a distance from them. The elbow may be known from the knee by its much greater sharpness, and by the small size of the arm and the forearm leading from it.

All these distinctions appear very plain and easy as we read them, or see them engraved on paper, or have a young child on the lap to feel them; but we shall find it quite another thing to distinguish them while the child is impacted in the uterus, or pressed into the pelvis, especially in our first attempts.





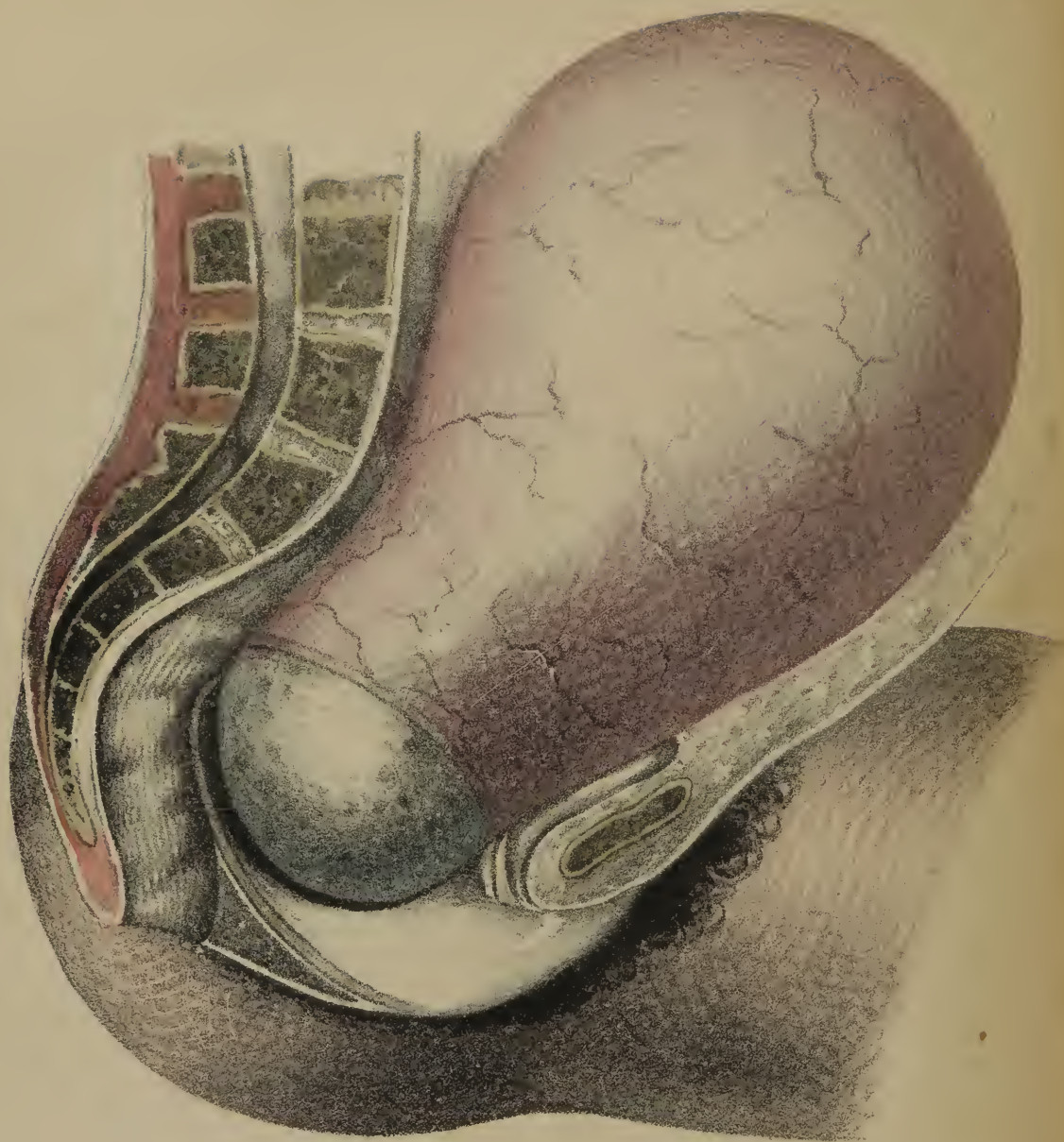
W. H. P. 1840. Plate 26.



Pl. 28



U. Sveder Lith 129. Fetus in U.





The best way to improve our tact is, to give ourselves the habit of feeling the different parts of very young living or dead children, as opportunity may offer; and when we make examinations per vagina, to proceed coolly and deliberately, and not to withdraw our finger if possible until we are satisfied. If we can not satisfy ourselves with the first examination, wait a little while, and try again: and by a perseverance in these means, we shall soon obtain sufficient dexterity to discover any presentation which may offer.

4. HOW FAR THE LABOR HAS ADVANCED.—Having ascertained the presentation, we wish to know what progress has been made before we arrived. If it has but recently commenced, we shall find the os uteri slightly dilated, with the membranes pressing against the opening during a pain. If more progress has been made, we may find the os uteri dilated to the size of a half-dollar, and the membranous bag protruding during a pain; in such a case, we consider the first stage of labor half over: for usually it requires as much time to produce this dilatation, as afterward to distend it to the extent necessary to pass the foetal head. We may find the waters broken, and the presenting part above the brim, within the pelvis, or pressing on and dilating the perineum—all which at once determine the condition and stage of the labor.

5. If we arrive in the early stage of parturition, particularly if it be a first labor, it is necessary (should there be any suspicions) to ascertain the *general formation of the pelvis*. We may do this by carrying the finger backward and upward toward the promontory of the sacrum; if we can not easily touch it with the tip of the finger, there is room enough there. Then introduce two fingers, and stretch them out in various directions within the pelvis; if there be any especial deformity, we shall easily perceive it: particularly, we may lay our two fingers flat against the symphysis pubis, to ascertain if there be any angle there. If the pelvis be unusually small, deformed, or have any tumors—either bony, sarcomatous, or serous—we can not fail by these means, intelligently used, to discover it.

6. THE STATE OF THE SOFT PARTS.—Here I would refer the reader to the four states (in one of which the os uteri may always be found) on page 105; as also the further description of the state of the external soft parts; the precise condition of which it is very desirable to ascertain as soon as possible after we arrive at a labor.

7. HOW TO DIRECT OUR OWN FUTURE CONDUCT.—If it is a natural labor, we shall have little or nothing to do till the child is born, but observe the process, which young practitioners especially ought to do attentively, in order to become familiar with it. If there be a head presentation, but rigidity of the parts, we must treat it as described under *protracted* or *difficult labor*. If the breech, the arm, or any other unusual part present, or if it be complicated with convulsions, hæmorrhage, or any other difficulty, we must treat it as laid down under its respective head; and we should lose no time in endeavoring to remove the difficulty, according to the rules there laid down.

8. TO ENCOURAGE THE PATIENT AND HER FRIENDS.—All will be very anxious to know whether everything is right, and if it be, we should encourage the woman with the assurance all we can; if not, we should give her such encouragement as the circumstances of her case will admit: and this we should do from time to time, which will operate as an anodyne to her fears, and a stimulus to her exertions and her patience. But we should never allow ourselves to be betrayed into the expression of an opinion of the time the labor will occupy; because many unforeseen circumstances may occur to disappoint us, which will very probably destroy her confidence in our ability to conduct as well as our knowledge of the duration of a labor, and perhaps produce so much excitement, fear, and alarm, as to cause considerable disaster in the latter part of the labor.

There are few subjects upon which the attendant is so frequently importuned, or about which it is so difficult to give a decided opinion, as the probable duration of labor. It is natural enough that both the patient and her friends should be anxious to know how long this process of suffering is likely to last; nothing, however, is more hazardous than a prognosis or opinion in these cases: and we would especially warn young practitioners to be very cautious how they venture an opinion, the result of which may prove it to have been founded upon *guess-work* or in ignorance. A labor which has commenced briskly and

regularly, with every promise of a rapid progress and termination, frequently becomes exceedingly lingering during the second stage, so that the expelling powers may perhaps even fail altogether in making the head pass through the os externum; whereas, on the other hand, a labor, the first stage of which has been slow and protracted, frequently experiences a complete alteration of character, and advances with a degree of quickness and energy which could scarcely have been anticipated from the manner in which it commenced. In *prima paræ*, or first labors, especially, it is particularly difficult to foretell, with anything like certainty, the duration of labor; hence it is that all unguarded assertions in this respect are not only liable to disappoint the patient, but also to destroy her confidence in the practitioner.

We have already stated that the course of labor varies in every possible way. In some cases, the same peculiar character of labor shows itself through two or three successive generations. Hence it has been observed that very tedious or very violent and rapid labors sometimes seem to be hereditary: the mother, daughter, and grand-daughter, being all remarkable for their lingering or rapid labors.

Having now made our examination, and satisfied ourselves on the various points specified, and made our announcement to the friends, and in our own mind assigned the labor to the *class to which it belongs*, as before observed, it must be treated according to the rules laid down under the various denominations of either *natural, difficult, preternatural, complex, or instrumental labors*. I shall presume that it is a case of natural labor, and shall therefore proceed still further to point out the duties of the attendant during its progress; and the peculiar treatment of any other kind of labor must be sought under its respective head.

HOW THE MIDWIFE SHOULD CONDUCT HERSELF.—Since every one can judge of the appearance and deportment of the practitioner, though not of her abilities, she should practise the art of pleasing, so far at least as it is conformable to the principles of honor and good-breeding. And everything connected with the state of the patient must be at all times regarded with peculiar interest and delicacy. But we are not to attempt to please by cant and hypocrisy, nor by the performance of menial offices in the chambers of the sick; nor by entering into league with nurses and other menials; nor by imposing on the uninformed by *pompous and pedantic jargon*, or by astonishing the weak-minded with pretended and miraculous cures—a species of knavery better suited to mountebanks than to persons who have consecrated themselves to the cause of science and humanity: but we must seek to please by the exercise of principles the very reverse of all these, whether physician or midwife.

SECTION III.

MANAGEMENT OF THE FIRST STAGE OF NATURAL LABOR

PREGNANT women are very liable to constipation, and ought, especially in the later period of gestation, to keep their bowels lax; and if our services are engaged beforehand, we ought to see that a salutary state of the bowels exist, particularly during the last few days of pregnancy. Attention to the state of the bowels is of the first importance, and must never be neglected. It is a subject, however, in which pregnant females are remarkably careless; and they will frequently, when not attended to by the practitioner, allow their labor to come on with their bowels in a very loaded and highly improper condition.

There is perhaps no one circumstance which is found to exert such a prejudicial influence on natural labor, in so many different ways, as *deranged and constipated bowels*. Where the contents are of an unhealthy character, the irritation which they produce in the bowels is quickly transmitted to the uterus, and tends not a little to pervert and derange the due and healthy action of this organ; hence arises one of the most fertile sources of spurious or false pains, of which we have before treated, under the “signs of approaching labor.” Where the bowels are loaded, in consequence of the pressure upon the ascending cava or great vein, considerable obstruction to the free return of the blood from the pelvic organs is

produced, the vessels of which become considerably congested. No organ feels these effects more than the uterus: from the immensely dilated condition of its veins, a state of local plethora or fulness is produced, which greatly interferes with the free and regular action of its fœtus, and thus not unfrequently predisposes to hæmorrhage and piles. Again, the rectum being distended with fœces, diminishes proportionably the capacity of the pelvis, and thus forms a mechanical obstruction, and prevents the ready descent of the head into it. Occasionally it forms, at the beginning of labor, a solid mass of indurated fœces, so hard, as at the first touch during examination almost to induce the suspicion of a projecting sacrum or tumor.

As a measure of common cleanliness, the bowels ought to be attended to before labor; for, besides the more serious effects now enumerated, the labor may be rendered exceedingly filthy for the patient, and not less disgusting to the practitioner: since, as the sphincter ani loses all power of contraction when the head advances deep into the pelvis, it follows that whatever fœcal matter is contained in the rectum is now forced out, to the no little mortification of the patient and her friends, and the disgust of the attendant. Hence, therefore, for the last few days of pregnancy, the bowels should be regularly opened (unless they are so spontaneously, which is seldom the case) by castor-oil, or by a dose of Alexandria senna and manna, with a little fennel-seed, to which a teaspoonful of Epsom salts have been added: this will be found an excellent medicine. The above may be prepared by infusion in warm or hot water, or any other mild laxative will answer. But if this has been neglected, and labor already begun—if there be sufficient time, it must be given immediately; if the first stage of labor is somewhat advanced, and there is not likely to be sufficient time, before the head enters and descends into the pelvis, for the medicine to operate, an injection should be given without delay. The enema or injection may be made as follows:—

Mix together of strong catnep-tea, or warm water	one pint;
Sweet-oil, or butter	one wine-glass full;
Milk	half a pint;
Molasses	one gill;
Table-salt	one tablespoonful.

Then let the nurse take a large French or other syringe, and inject it in the following manner: Place the patient on her back, with a sheet folded and laid under the hips; let the legs be flexed somewhat on the abdomen; then let the syringe be slowly but completely filled, to exclude all the atmospheric air; grasp the lower part of it with the left hand and carry it to the rectum, raising it a little toward the abdomen, and then slowly and cautiously introduce the point into the rectum up to the shoulder; then apply the right hand to the piston, and make moderate but continued pressure thereon, while you press against it with the left hand to prevent injury to the anus or rectum. When all the contents are thus injected into the rectum, it may be repeated several times, according to the size of the syringe. The common method of giving injections is very inefficient: the liquor injected is not proper, nor is the quantity usually given sufficient to produce the desired effect. If there be also false pains, a teaspoonful of laudanum may be added to the injection with great advantage.

The preparatory pains of labor, which form the first stage, do not require that the patient should take to her bed at this early period; and this is especially the case in first labors, where the first stage is somewhat tedious. Until near the end of the first stage, she ought rather to be induced to suppose that actual labor has scarcely yet commenced, and that she may still sit up, or walk about the room, as best suits her feelings; taking care at the same time that everything is in readiness against the moment when it shall become necessary for her to lie down.

DIRECTIONS FOR THE NURSE.—The following are duties which should be performed by the nurse, but should also be well understood by the practitioner or midwife, for two reasons: first, that they may know when they are properly performed; secondly, because in some cases of sudden labor they may, in the absence of a regular nurse, be required to perform some of them:—

PREPARATION OF THE BED.—This may be on a cot, or, what is better, an ordinary bedstead, on which should be laid a straw-mattress, and over this a hair-mattress, if possessed (but by no means on a feather-bed); and over the mattress a skin of leather, a square of oiled silk, or a piece of India-rubber cloth, is to be laid on that part of the bed which will be occupied by the patient's hips, to protect it. Or, where these are not in readiness, or not possessed, take an old blanket and fold it a number of times; then over this the sheets, folded in the same manner, and placed under the hips of the patient, which serve a twofold purpose: first, to protect the discharges; and, secondly, to elevate the hips during labor, which is very essential. These folded sheets will absorb the discharges, and can afterward be removed without disturbing the patient, leaving dry bed-muslin underneath. The skin, blanket, or oiled silk, is allowed to remain some days longer.

During my attendance at a labor very recently, the nurse, who had lived many years in the neighborhood of the Indians in this country, stated that when the female Indian is attacked with labor-pains, she retires a short distance from the cabin to a lodge always in readiness for their women during confinement and menstruation (from which, and from their language and other customs, it has been inferred that the aborigines of this country are descendants of the lost tribes of Israel).

The pregnant woman, when her pains commence, retires to this lodge or cabin alone, and, as labor advances, places herself in a recumbent posture on the back, and grasps a pole, previously placed horizontally over her, which extends from the head to the feet, and is securely fastened to two stakes in the ground. When she is attacked with a pain, she seizes the pole and raises herself up, and continues in this position till it ceases. The advantage of this contrivance is evident, independent of the relief afforded: the weight of the fœtus increases the uterine contractions, and thus affords additional aid in the expulsion of the fœtus.

Mrs. Davis (the nurse who communicated this information) states that no one is allowed to be present—not even a female—and should an Indian venture near the lodge, it is deemed *sacriligious*, and the tribe would expect no good luck to follow them in hunting, &c. There is one exception, however, to this: when the woman in labor becomes alarmed, she utters a *whoop* as a signal, when some elderly female goes to her assistance.

A short time after the labor is completed, the woman washes herself and child in a contiguous stream, and returns to her cabin. Their practice is to wash their children in cold water—as they say, to strengthen them. This, no doubt, prevents rickets, scrofula, &c., which are seldom or never found among the Indians. This lady, who lived some time among them, also states that she scarcely ever saw a weak or sickly child at any time. She asked the wife of a chief of the Oneida tribe why they have so few sickly children; the reply was, “Because we wash them in cold water.” The squaws, she says, never suffer so much in labor as the whites, and the reason assigned was, in consequence of their eating freely of slippery-elm bark, bathing the parts in bear's-grease, and taking plenty of exercise. The infant is usually fastened to a board on the back, secured by a band over the forehead, suspended over the shoulder of the squaw, and thus carried. This board is also suspended between two stakes, and constitutes the child's cradle.

Having prepared the bed, the nurse will next procure a kettle of warm water (soap, water, and towel, for the use of the attendant), a pair of seissors, and a piece of tape, or strong cord; a little sweet-oil; the clothes of the infant to be placed near the fire; a blanket to receive the child, and a suitable vessel to contain the after-birth; a dry tub to deposit all the soiled linen in: this will have a tendency to prevent a check of perspiration from wet clothes after labor, which otherwise might occur; a piece of muslin, half the size of the hand, folded several times, with a hole in the centre for the cord to pass through; also a muslin bandage to cover this and pass round the body of the child, when washed and ready for dressing; a broad bandage, suitable to be placed around the body of the woman after delivery; muslin (not linen) chemise, well aired and dried, to be put on after the wet cloths are all removed; an old soft linen towel, for the purpose of placing over the external parts to receive the discharge, after they have been washed with a little warm spirits-and-water; a basin or tub, with water and soap, towel, &c., to wash the child.

Some of the preceding directions might appear superfluous to many people ; but whoever has been long in the practice of midwifery will very often have been annoyed from either the want or untimely preparation of many of them—and that, too, in society where we might expect better arrangements.

Having seen that the foregoing articles are provided and in readiness, or having given orders, and leaving the nurse to prepare them, it is not necessary that the practitioner (especially if a physician) should remain all the time in the room ; for, since the first stage of labor, particularly in a first child, is usually protracted, the constant presence of the attendant, especially if a male, in the lying-in room, would not only be unnecessary, but highly improper : unnecessary, because, after seeing to the above preparations, he has frequently little or nothing to do ; and improper, since the woman requires, from time to time, to attend to the calls of nature, from increased irritability of the bladder and rectum, which is very common during the first stage of labor. Besides, if the practitioner remain in continual attendance, it may lead the patient to think that she is in a situation to require assistance, or else that there is a prospect of her obtaining speedy relief ; but neither of these being realized, fear, despondency, and suspended uterine action, may ensue. If she is unwilling that he should leave the house, he may be provided with another room, or retire to rest.

Frequent examinations should not be made, particularly during the first stage. We can do no good by such a practice ; after we have once gained the information we require, we can not facilitate the first stage of a natural labor, but we may do a great deal of injury by too-frequent examination : we denude the vagina of that soft, relaxing mucus, which is designed by nature to protect it ; we incur the risk of destroying the membranes ; we may predispose the parts to inflammation, and retard the dilatation of the os uteri itself. As, however, it is a common idea among women that, under such examination, material assistance is rendered, we shall frequently be urged, even during the first stage, especially if the labor be rather slower than usual, to remain in close attendance upon the patient's person ; and those solicitations are often advanced with a degree of fervency that it appears the extreme of cruelty not to accede to. Should this be the case, the finger may be introduced from time to time with the greatest caution and gentleness—more to pacify the patient's mind, by an announcement to her of the progress of the labor, and to assure her that she is not neglected, than with any other view than that of merely watching the progress of dilatation. Still it is unnecessary. The more rigid the parts are, the more do they need the softening influence of the natural secretion, and the more careful must we be to preserve it.

Should there be any obliquity in the os uteri, it must be corrected by the position of the patient. If the os is far back against the sacrum, let the patient lie on her back, and take a few pains ; this will cause the fundus to fall toward the spine, and the os will be thereby removed nearer the centre of the pelvis. If the os is on the right side, let the patient lie on that side, and the fundus falling, will force the os nearer the centre of the pelvis ; if on the left side, *vice versa*. These changes of position will usually remove this obliquity better than any other method, and will often greatly expedite the labor. We are advised by some authors, in order to remove this difficulty, to hook our finger in the os uteri and draw it forward to the centre of the pelvis, and retain it there during two or three pains ; but there is a rudeness and violence in this plan which will be easily understood by such as make the attempt, and who, moreover, will often find that they can not retain it in its place without using so much force as to expose the os uteri to contusion or rupture, which not unfrequently follows this method of removing the obliquity of the uterus.

TEMPERATURE OF THE ROOM.—Where the apartment can be selected, it should be, as far as practicable, spacious, quiet, and well ventilated ; and the temperature should be kept moderate, for too great heat predisposes to flooding and debility of the womb, while too much cold predisposes to peritoneal inflammation : so that every practical means should be resorted to, to keep the room of a moderate and equable temperature.

RUPTURING THE MEMBRANES.—In most cases, as soon as the os uteri is fully dilated, the membranes burst and the water escapes, its influence as a dilating agent being no longer needed. But when the membranes are unusually tough, they will often remain entire until the head has cleared the os uteri

or even (but more rarely) until it has passed the os externum. When we are satisfied from examination that the os uteri is fully dilated, especially if the head has passed through it, we may rupture the membranes by pressing the finger against them during a pain, as their remaining entire after this period is an impediment to the advance of the child; but it should not be done hastily, nor until we have first satisfied ourselves that their usefulness is at an end.

SECTION IV.

MANAGEMENT OF THE SECOND STAGE OF NATURAL LABOR.

THE second stage of labor commences with the full dilatation of the womb, and continues until the head, having passed through the pelvis, rests upon and distends the perineum and external soft parts, forming the perineal tumor. (See plate on page 113.)

BEST PERIODS FOR ASCERTAINING THE PRESENTATION.—There are three periods in labor at which it is more easy to ascertain the presentation than at any other times: first, when the os uteri is dilated to about the size of a half-dollar, and will readily admit two fingers within: the presenting part may then be easily felt, if examination be made; second, when the os uteri is fully dilated, the membranes recently ruptured, and the head on the point of entering the brim of the pelvis; third, when the head is at the inferior strait, and has formed the perineal tumor.

The first opportunity has passed; the second now offers itself: and we may avail ourselves of an examination at this time, either to confirm our former opinion, or to correct it.

In a natural labor, we can now not only easily distinguish the head from any other part which may present, but the head having entered the brim, we can as readily learn the exact position in which it has entered. Many practitioners fail egregiously in their diagnoses of the presentation: yet the fault is not in the rules, but in the person. The precise position of the head at the brim of the pelvis is easily made out—to discover which, we should first endeavor to distinguish the ear, by introducing the finger between the symphysis pubis and the head of the child, and then we shall probably find the ear a little to one side.

We can readily determine what is the position of the head by examining the sutures and fontanelles. When we have found the sagittal suture, we can trace our finger along it till we come to one of the fontanelles or larger openings where the sutures meet; these are called the anterior and posterior fontanelles, and may easily be distinguished by remembering the following particulars: the posterior fontanelle is formed by the junction of the two limbs of the lambdoidal and the sagittal sutures, and consequently forms a triangle, which is at once distinguished by the finger: where this fontanelle is found, there is the occiput. Having found this, trace the finger along the sagittal suture to the other extremity, and we shall discover the anterior fontanelle, which may be known by the union of four sutures, the two legs of the coronal, the sagittal, and the frontal; this fontanelle is near the face, and the position in which these are found shows with certainty the situation of the head in the pelvis; so that, by carefully examining the ear, sutures, and fontanelles, of the head, in ordinary labors, the position may be discriminated with great exactitude. When the waters have been long broken, and the head subject to great compression, it becomes so much swollen at the presenting part, as not to be easily recognised—which swelling will sometimes remain for some days after birth.

When the second stage of labor is much protracted, the sufferer is sure to become despondent; and this is one of the most annoying circumstances to be encountered during parturition. The patient exclaims that she is not making any progress; that she shall never get better; that she is dying; and many other discouraging expressions of a like nature are used, which are much calculated to frighten the attendants, and unhinge a young practitioner. This is often very distressing to the young accoucheur; and, without exercising great patience and fortitude, he will often be alarmed, and tempted to abandon

the case, or send for counsel. But let the attendant put on courage and resolution, bearing in mind the great resources of nature, and he will be carried triumphantly through all these painful and distressing scenes—when the happy termination will requite him as well as the female for all the sufferings endured.

But the skilful practitioner will not judge of the amount of danger by these evidences, declared either by the patient or her friends. In all such cases, the physician or midwife will estimate the amount of danger by the condition of *the pulse* and of *the passages*, and not by the clamor of the inmates of a lying-in room. Whenever the structures of the parent begin to suffer from pressure, the parts become hot, dry, and tender to the touch; and such a condition never fails to accelerate the circulation: but the process of parturition may go on for many hours, or even for several days, under good management, without materially affecting the pulse. So long, therefore, as this function shall continue undisturbed, the attendant may keep the mind at ease; and it is a duty to appear steady, confident, cheerful, and obliging, and strictly to enjoin the same line of conduct upon others, with a view to inspire the patient with hope. Every effort must be made to support the woman's spirit; for if this despondency be allowed to gain ground, suspended uterine action may be the consequence, which may result in a different class of labor. When there is the least tendency in the contractions to become lingering, the attendant must redouble his efforts to support the confidence and revive the drooping spirits of the patient. We should not run into the very common error of judging of the danger of a labor by the time which it has occupied, or the severity of the pains, but by the symptoms which it presents.

Sometimes there is very severe and unusual pain in the back: this may be relieved by passing a napkin folded lengthwise under her loins, the extremities of which should be raised by a person on each side of the bed during a pain. At the latter part of this stage, there is commonly great pain experienced in the sacrum, caused doubtless by the head pressing upon the nerves which pass out thence: counter-pressure is the only means of relief; let the nurse take her station at the bedside, and press hard against the sacrum or lower part of the spine, on the recurrence of a pain. Spasms of the lower limbs are also occasionally the attendants of the second stage of labor. Sometimes they pursue the course of the crural; at other times that of the great sacro-sciatic nerves, more especially when the head is long retained. During their continuance, they are productive of the most excruciating sensations. The most efficient remedies are dry friction with the hand, ligatures around the affected part, and a hot smoothing-iron applied to the sole of the foot.

POSITION OF THE PATIENT.—Toward the conclusion of this stage, if it is a first labor (and it will soon arrive if she has borne children before), the female should be placed in an obstetrical position, as it is termed, or the position in which she is to be delivered. The posture for delivery has varied at different times, and still varies in different countries. In the earliest periods, the sitting posture was preferred: and in Ambrose Pare, Daventon, and other old writers, we have a description and plates of labor-chairs. In China, and in Cornwall (England), the patient is delivered on her knees, or leaning over a chair; but generally throughout Great Britain, and in many parts of this country, she is delivered on the left side, the hips being close to the edge of the bed, and the knees drawn up toward the abdomen, with a pillow between them to keep them separate.

The position which I prefer is on the back, with the knees drawn up, the feet against the foot-board, and a rope, sheet, or towel, tied to the bed-post (or the Indian method, as described on page 124), on which she can pull during a pain. This last position, I think, is decidedly the best, for the following reasons: When the patient is on the side, the pains do not concentrate themselves on the fœtus as they do while lying on the back; the woman, to use a common phrase in the lying-in room, “can not help herself” so well as when on the back. All women, indeed, when left to their own choice, invariably and instinctively choose this position, evidently showing that it is the posture dictated by nature.

Besides, lying on the side frequently produces obliquity of the uterus, which interferes with and retards its power, and consequently impedes labor. This has been demonstrated again and again by placing the same woman in both positions. If the patient lies on her back, the fundus of the womb will fall back toward the spine, thus bringing its axis into a proper direction, and of course the os uteri will present in

a more favorable manner ; consequently the child will be delivered with greater ease, and much sooner, if the back-position be taken in preference to that of the side. So very uneasy and agitated do some women become on the side, that they can not be delivered ; but just as soon as they are placed on the back, labor proceeds and speedily terminates.

Again, the limbs are too close together when the patient is on the side, and the labor is thereby retarded. So sensible have the advocates of this position been that the closeness of the limbs retards the passage of the child, that they recommend a pillow placed between the knees to keep them apart. But there are four reasons why the pillow is objectionable : it increases the heat of the person, perhaps already profusely perspiring ; it does not afford sufficient support to prevent the legs from being pressed together ; in the height of the pain it will often slip away from between the knees, and we lose its advantage just when we most require it ; lastly, if there were none of the above objections, it is impossible to keep the limbs apart, as they naturally are, when the patient is on her back : all which shows the vast superiority of this over every other position.

I can not imagine a more awkward situation for the accoucheur than the act of sitting at the bedside of the female, with her posteriors turned toward his face—one half of a folded sheet under her hips, and the other half in his lap—his coat-sleeves rolled up like those of a butcher—one hand pressing on the perineum, the other manipulating in the vagina ! The picture is ridiculous.

At length, the head advances and presses on the perineum, and very fully distends the soft parts of the mother. Then commences the expulsion through the outlet of the pelvis, which leads us to the duties of the third stage.

SECTION V.

MANAGEMENT OF THE THIRD STAGE OF LABOR.

SUPPORTING THE PERINEUM.—Most works on midwifery abound with strict injunctions and minute directions respecting the great importance and the particular manner in which the perineum should be supported during this stage ; for all which I never could see the least reason : but one author appears to have copied from another, while none have paused to inquire into its necessity. To suppose that the perineum can not endure the necessary amount of tension required to perform its office, is unreasonable : it is equivalent to asserting that the Creator has made less adequate and more imperfect provision in this than in all other parts connected with the expulsion of the fœtus, and that he has made more inadequate provision for the integrity of the parts in the human female than in those of the lower animals, or for the due performance of any other function of the system.

Who supports the perineum of the lower animals during parturition ?—yet who ever saw this organ lacerated in any of them, except indeed in those cases where the necessity of their situation was supposed to require assistance ? And this being given in ignorance and violence (always two very familiar companions), may properly be considered the cause of the accident. Who ever saw or heard of laceration of the perineum in the human female when they were delivered alone, or among the various tribes and nations of the earth where no such custom of supporting it prevails ? It is also very remarkable that none of the ancient writers on midwifery ever refer to this accident : they neither advise any method by which it may be prevented, nor any means to be used for its relief when occurring—proof positive that they were unacquainted with the accident. We may therefore rely on the belief that it never occurred in their practice.

In fact, we do not hear anything about this dreadful accident (and it is, indeed, dreadful when it occurs) until after the invention and common use of forceps to hasten delivery, before the parts were prepared by nature for such extensive dilatation ; and the other abominable and utterly useless practice







of boring, scooping, and stretching, the soft parts of the mother, under the absurd pretext of making room for the child to pass !

I believe no observation is more generally true than that which recognises the existence of a power in the structure and constitution of every animal, by which evils are prevented and remedied, and by which the greater part of the difficulties occurring at the time of their parturition are overcome ; which power, combined with sympathetic or corresponding actions of other parts, is commonly exerted with a degree of energy and effect proportionate to the difficulty. Every change which is made in the parts, both external and internal, at the time of labor, is successive, and every pain seems to produce two effects : it dilates one part, and gives to some other part a disposition to be dilated. If, therefore, by hurry or imprudent management, the head of the child, in its passage through the pelvis, be brought into contact with parts which have not yet acquired their disposition to dilate, or if, by artificial dilatation, we attempt to supply the want of the natural, the parts will be more easily lacerated than distended ; besides, all such conduct tends to irritate and inflame the parts, making them rigid, and thus utterly preventing their dilatation. Under such circumstances it is no wonder that the perineum should be lacerated ; but then these are all circumstances of our own creating.

Even the celebrated Dr. Churchill, after recommending the practice of supporting the perineum, admits that it is frequently productive of much evil. He says (page 218) : "I really believe that it would be better not to touch the perineum, than to make injudicious pressure. *It has been my lot to witness more than one case where rupture was owing to excessive and injudicious support.*"

RECEIVING THE CHILD.—As the head passes through the vaginal orifice, the attendant, having removed all obstructions, should receive it in the right hand, allowing it to make the usual rotation, and carrying it forward as the pains expel the shoulders and body of the child. With a napkin in the left hand, wipe the face of the child, and clear the mouth of any mucus which may be there, preventing the infant from breathing. Before the shoulders are expelled, feel whether there be any coil of cord around the neck. It frequently happens that there is one, sometimes there are two, and occasionally three or four, folds of the navel-string coiled around the neck ; and if it were not liberated, it is very possible that the pain which expels the shoulders might cause the placenta to be drawn away from its attachment, to the great peril of the mother, from hæmorrhage ; it might even cause an inversion of the uterus. But the chief danger is to the infant. If, on its expulsion, the cord be drawn tightly around its neck, the circulation of the funis will be arrested by the compression of the vessels ; and the same compression may also close the trachea to such an extent as to prevent the ingress of air into the lungs : thus the two sources by which life is maintained being cut off at the same time, strangulation must be a necessary consequence. In such a case, a deep livid ring will be found encircling the neck. Should such a birth take place in an unmarried woman, who had any interest in concealing it, very possibly she might be accused of murder, founded on the appearance of the mark around the child's neck, which could not be distinguished from the effects of a cord applied with the intention of destroying its life.

Sometimes the membranes cover nearly the whole body, and prevent respiration ; when this happens, the features can not be distinguished. In this case, the hand must be passed downward, and the membranes drawn over the head. I attended a case where this occurred. The whole body was nearly covered with a thin, blue, transparent membrane, which gave a very strange and novel appearance to the child.

As soon as the child is born, it should be laid on one side, with its back to the mother ; by this means the danger of the copious discharge, which follows delivery, getting into the mouth and suffocating it, will be completely avoided.

SEPARATING THE CHILD.—As soon as signs of life in the infant are manifest, which sometimes take place before it is wholly born, and at others not until some time after, and which are generally known by the child's crying (when breathing, life is established), the cord may be separated. Let the child be withdrawn from beneath the bed-clothes, the mother's person being left perfectly covered and concealed. Sometimes the funis is very short ; this should be examined before we withdraw the child, or the sudden

jerk may separate the placenta, and cause an alarming hæmorrhage. Sometimes inversion of the uterus may be the consequence. If we find the cord sufficiently long, which is usually the case, we may place the child more completely in view, and, by lifting the bed-clothes from above it, proceed to tie the cord, and separate it from the mother.

The ligature may consist of a piece of fine tape, bobbin, or eight or ten pieces of thread, which may be placed together, and tied at both ends: and this preparation should be made before the child is born. Even in forming the ligature, some attention is necessary; for if it be too thick, it will not compress the arteries sufficiently to prevent bleeding after the funis is cut, and it is also liable to lose its hold and slip altogether off the cord, thus leaving the vessels entirely unprotected; and if, on the contrary, it is too thin, it will probably cut through the membranes covering the cord, as well as the coats of the vessels themselves, and thus fail to prevent hæmorrhage. If the ligature be made of threads, it is necessary that they should be all of equal length: for if one or two be shorter than the rest, they alone will make compression, and consequently they will act as though the ligature were composed of them only.

The ligature is to be tied a full inch from the umbilicus. Some tie it two and even three inches from the umbilicus, but when tied long, the disagreeable odor during its separation is increased, without being of any benefit. The place where the ligature is fixed does not at all affect the place where the cord separates: this is a certain fixed line near the umbilicus, evidently marked at the time of birth. Most authors improperly recommend two inches. They also recommend a second ligature, about two inches from the first, and to divide the cord between them; but this additional ligature is entirely unnecessary, unless there should be twins attached to one placenta, which very rarely occurs; a single knot, however, may be tied in the cord itself; but should there be twins, it will be safest to tie the cord twice. "But," say some authors, "the mother may bleed to death if the placenta remains attached to the uterus, and the cord be not ligatured." Such persons are ignorant of the placental circulation, or they would know better than this.

When we take up the child to lay it in the blanket held by the nurse, we (especially young practitioners) must remember that it is as "slippery as an eel," and we shall be very liable to drop it if we are not careful, and do not take hold of it properly. It should be taken with the left hand by one or both ankles; the back of the neck ought to rest in the arch formed by the thumb and forefinger of the attendant's right hand, while the back lies in its palm, and the points of the remaining three fingers are under its right axilla, or armpit. If held in this manner, it can by no means fall to the floor.

TO ASCERTAIN WHETHER THERE BE ANOTHER CHILD IN THE WOMB.—As soon as we have delivered the infant to the nurse, we may examine to see whether there be another fœtus in the womb: for it has repeatedly happened, with young practitioners especially, that they have wished the parents joy, and retired from the room; and before they have reached home, a messenger has followed them, to announce the birth of another child!

In order to avoid so gross an error, we ought in all cases, as soon as the child has emerged from the womb, to ascertain whether there be a second. If the uterus contain another fœtus, its fundus will be felt high up above the umbilicus, and its general bulk will be almost as great as it was before the expulsion of the first. We shall be able to define it distinctly, and it will present that peculiar elasticity and degree of subdued fluctuation which is so characteristic of the gravid uterus toward the close of pregnancy. But if there be no other child in the cavity, we shall find the womb in one or other of the five following conditions: first, it may be almost as small and hard as a fœtal head, so that we can grasp its body completely, and it will feel nearly as solid as a ball; secondly, it may be almost equally small, but softer, so that when we press it, it relaxes under our hands, and has somewhat of a doughy feel; thirdly, it may be about the same size, but one minute hard, and the next soft; fourthly, it may be nearly as large as an adult head, and so hard, that we can perfectly define it with the hand: it bears the character of a large solid tumor: and, fifthly, it may be as large as an adult head, and soft, its general volume not so easily defined, also communicating a doughy sensation to the touch, and, when grasped, it becomes harder in substance and less in bulk.

The first three states announce that the placenta has almost wholly passed into the vaginal cavity, and the last two indicate that it is still in utero; the fourth proves that the uterus is contracted around the mass, and the fifth shows that it has not yet taken on itself the office of contraction for the purpose of expelling it.

To ascertain whether the perineum has suffered any injury (which should occasionally be done for our own satisfaction, and to confirm our views respecting the uselessness of supporting it), if it has been at all injured, the anterior edge will feel rough and exceedingly sensible to the touch; but if otherwise, it will be smooth and not unusually painful. Generally, however, this practice may be dispensed with.

Having thus separated and disposed of the child, we must attend to the duties pertaining to the fourth stage of labor.

SECTION VI.

MANAGEMENT OF THE FOURTH STAGE OF NATURAL LABOR.

This stage, as already observed, consists in the delivery of the placenta. From all that has been said in the foregoing pages of the previous stages of a natural labor, we can not fail to have perceived that all the passive changes which the parts undergo, and all the active powers exerted for producing these changes, are not only entirely independent of the will of the patient, but are fully equal to the end which they were designed to accomplish, without any especial assistance; which is usually no more required for the purpose of forwarding a natural labor, than for any of the ordinary functions of the body.

When, therefore, we have seen a child safely expelled by a process beautiful in itself, and regulated by the greatest wisdom, there seems to be no reason why we should be apprehensive of error or inability in those same powers for the separation or exclusion of the placenta, which is but an inferior or secondary part of the same process. Having accomplished the greater, why should we doubt their ability to perform the lesser? And why should we not in this, as well as in all other cases of medicine, be first convinced of the *necessity* of using art, before we attempt to give assistance? On our errors of conduct here the life of the patient may depend: it is therefore necessary that our conduct should be guided, not by prejudice, nor by blind submission to medical or other authority, but by the dictates of reason and sound experience.

Having observed the condition of the uterus immediately after the birth of the child (when we were ascertaining whether there was another in the womb), we may, if there have been no subsequent contractions, know whether the placenta be in the womb or in the vagina. Where the placenta is not ejected from the womb with the last pains which expelled the child, which is very rarely the case, in about ten minutes the contractions are generally renewed, although very slight compared with what they were before. Having disposed of the child, we may again place our hand on the abdomen and mark the state of the uterus, which may have changed much since our first examination. If the uterus be found hard, small, and low in the hypogastric region, we may be sure that the placenta is expelled from the womb and is lying in the vagina, from which it will soon be ejected by the natural powers. But occasionally the vagina is somewhat paralyzed by over-distension, and does not readily take on renewed contractions: in such a case, very gentle traction on the cord in the axis of the vulva will deliver it. When there is a larger circumference of the uterus felt, and a soft, doughy feel on pressure, wind the cord around the fingers of the left hand, and introduce the index or middle finger, or both (of the right), into the vagina, as in an examination, and follow the cord: if we can not reach the placenta, it is still in the uterus, or, if we can only reach a little of it, it is but partially expelled; but if the placenta is in the vagina, that state of the womb denotes internal hæmorrhage, and must be treated as directed in another part of the work, *in labor complicated with internal hæmorrhage*. If the placenta be not expelled, and there is no hæmor-

rhage, we must wait a little, and make slight friction on the abdomen, which will generally excite uterine contractions. If the placenta be within the uterus, we must never pull on or jerk the cord, because by so doing we may tear away the adherent placenta from the uterus while there are no contractions going on to close the mouths of the vessels laid open by the separation, and fatal hæmorrhage may follow; or we may tear the cord from the placenta, or revert the flaccid uterus, or even produce a perfect prolapsus of that organ—all which are fearful accidents, frequently resulting from improper extension on the cord.

Generally, in a natural labor, the placenta will be expelled, at least into the vagina, in twenty or thirty minutes, and sometimes sooner, whence it may be easily drawn by slight pulling on the cord; but it may be retarded somewhat, especially after a very protracted labor: we should therefore wait, and if it be not in the vagina, but remains in the womb more than an hour, we then deem it not a natural but a complex labor, complicated with a retained placenta—for the proper management of which, see directions under that head.

After the placenta is delivered, put on the bandage, which ought to extend from the hips to the ensiform cartilage or stomach. Let the wet cloths be removed, which may be done without disturbing the woman much, if they have been arranged as before recommended. Before leaving the house, see that the uterus is well contracted: it should feel through the integuments about as large as the fist; some are not as small, however; but the smaller it is, the better for the patient, who, if left with a well-contracted uterine globe, may safely be pronounced beyond the reach of danger from any effusions of blood that can with propriety be denominated uterine hæmorrhage. The parts should be washed by the nurse with a little warm spirits-and-water, and a warm cloth laid to them.

SECTION VII.

RECAPITULATION AND FAMILIAR ILLUSTRATION OF NATURAL LABOR

I HAVE thus given the duties of the accoucheur during a natural labor; and the student or midwife, by bearing in mind the directions therein contained, will be able successfully to conduct the female through its various stages.

It has occurred to me that it would illustrate the subject still further, to detail or give the minutes of the latest case of labor which I have attended. And to show the estimation in which the REFORMED PRACTICE is held by some of the higher class of our citizens, I would observe that the pregnant lady was in possession of my medical work, and, notwithstanding she believed none but midwives should officiate in parturition, she was unwilling that any but the author should attend:—

Mr. ———, of this city (residing in one of those splendid mansions near the Battery), about one o'clock in the morning sent a carriage, with an earnest request for me immediately to attend on his wife, supposed to be in labor. I was aroused from sleep, with the most urgent importunity to visit the lady as soon as possible. On arriving at the house, and being introduced to the patient, I found that it was a case of first labor.

As usual, I endeavored to exercise composure myself and to produce the same in the minds of the friends, by a few timely words, all which has a tendency to allay the excitement and agitation which usually accompany the first stage of labor.

After a short respite, I proceeded to make inquiry respecting the general health of the lady: found it good, and that she had been for the last three months taking freely the mucilage of *slippery-elm bark*, to the use of which might be attributed the healthy state of her system, and which apparently prepared the way for a safe and speedy delivery. I now took my seat by the side of the bed, to ascertain more particularly whether labor had commenced. Having obtained a history of her case, my attention was directed to the pains: first, their severity; second, their frequency; third, their duration; fourth, whether

true or false—on the assemblage of which I formed my diagnosis respecting her state and condition, and made up my mind as to my future conduct in relation to the case. This occupied about one hour. The pains were moderate, renewed at long intervals, and of that character termed “grinding,” which convinced me that it was the incipient stage of labor.

I now made an examination; but not, however, as is customary with most physicians, by intimating anything of the kind to the woman, for the anticipation is always worse than the reality. After having immersed the middle finger in a little sweet-oil, and on the accession of a pain, in a low tone of voice, I observed to her as follows: “If you please, allow me to see whether you are in labor, and if all is right”—to which she readily assented, without the least emotion or apparently unpleasant sensation, and which would not have been the case had I previously proposed to her an examination. Passing my hand under the bed-clothes and over the limb, I requested her to flex her knees and distend them a little apart. I then carried the finger slowly and cautiously to the orifice of the womb, and found that it had become dilated to about the size of a half-dollar. After washing the hand with soap-and-water, I again seated myself by the side of the patient’s bed, and announced to her friends that labor had actually commenced. The pains being moderate and uniform, and there being no immediate necessity for my attendance, I left the room and retired to bed. I did not fully ascertain the presenting part, but was very confident that it was the head.

About five o’clock in the morning, I was again summoned to attend. The grinding pains had ceased, and those more bearing or pressing, more frequent and severe, had succeeded, which convinced me that there was a full dilatation of the orifice of the womb, and that the patient was in the second stage of labor. I now examined in the same manner as before, and found the vertex or crown of the head evidently the presenting portion of the fœtus. At this time the uterine contractions were very acute, and the patient laboring under great despondency. She cried out for several hours in succession, “I shall die!—I shall die!—I am dying!” And as many cases of labor as I have attended, had I not been satisfied that the presentation was natural, and the pains regular and efficient—had I not been well acquainted with the great resources of nature—possessing a nervous temperament, and feeling much sympathy—I might have been discouraged, and sent for counsel; but like an experienced mariner at the helm of his ship in the midst of a storm, I felt calm and confident, being well assured that the woman would have a safe delivery. I permitted her to change her position as she pleased: to stand upright in the bed, supported under the arm by two persons; at other times she was allowed to walk about the apartment.

When labor had progressed a little further, and the third stage was about to commence, the head of the child being in the hollow of the sacrum, and pressure beginning to be made on the perineum, I deemed it advisable to direct the bed to be made. I ordered an old blanket or coverlid to be folded a number of times and laid on the mattress; then a muslin sheet folded in the same manner and laid over it; and the patient (then in her night-dress) placed in bed, with her hips on the same. During a pain, she pressed her feet against her husband, who sat at the foot of the bed, and the hand of an attendant was seized. In this condition she continued for some time, the pains becoming more severe, producing great outcries and continued depression of spirits. I encouraged her by every means in my power. Occasionally I made an examination, to satisfy myself and the friends that there was no impediment to delivery. Still the scene was gloomy: and I was involuntarily led to inquire how it is that the female sex—the most interesting portion of the human race—is doomed to pass through such a fiery ordeal of suffering. I felt assured, however, at the same time, that all was well for the mother and child, and that the labor would terminate favorably: I judged so from the size of the vagina, the capacity and proper standard of the pelvis, the regularity of the pains, freedom from fever, and coolness of the soft parts, as well as from her general health.

Presently, the membranes broke, and the waters gushed forth. Respite and relief now followed; but in a few minutes the uterus, as if to compensate for lost time, redoubled its energy, and forced the vertex against the perineum, forming the perineal tumor or enlargement. Notwithstanding the exquisite pains

of the patient, new courage was now experienced, not only by myself but by the attendants, and which was also imparted to the woman. At this moment the contractions of the uterus were tremendous, and the patient in a state of phrensy while the head was passing through the soft parts. I continued to encourage her as she constantly cried out that she was dying: "Woman," said I, "it is impossible for you to die in this state; every pain you have is necessary; the worse you are now, the better for you—the sooner your difficulty will be over," &c. I stood by her side, and kept my hand under the bed-clothes, to see that every obstruction was removed, and also to be in readiness to support and receive the child.

In a few minutes, the perineum had become enormously tense and distended, and as thin as paper, allowing the foetal head to pass out. The pangs of the patient were now changed for relief, mutual congratulation, and joy. In about a minute after the exit of the head, the womb renewed its contractions, and expelled the body and limbs of the child, with the cord twisted twice around its neck, which, of course, I immediately disengaged.

It is under these circumstances that the ignorance and alarm of bystanders, both male and female, are manifest and self-evident. Possessing no knowledge of physiology and midwifery, their education in this respect having been shamefully neglected, instead of rendering proper assistance to the mother or child in the moment of peril (which a few hours' instruction would enable any one to afford), they utter shrieks of alarm and precipitately fly from the woman, and perhaps leave her and her infant to perish! Young ladies are not allowed to acquire any knowledge of these subjects, it being considered too indelicate or too unpopular. They are taught foreign languages, embroidery, to dance, to sing, to read novels, and in their dress to lace themselves almost to death, or induce some serious or fatal disease! Hence they know nothing of the laws of health, and thus their ignorance and the ignorance of their mothers when they become sick. Instead of availing themselves of a rational and judicious reformed practice of medicine, they resort for aid to our fashionable mineral and depletive doctors, and very often fall a prey to their malpractice, by bleeding, mercury, &c.

But to resume the subject, after this short digression: I now removed the child a short distance, and placed it either on the back or side, taking care to secure the clothing of the mother, and keeping the parts well covered, but at the same time exposing the infant to full view. In a few moments I proceeded to tie the umbilical cord: I passed a strong and soft piece of twine around the cord, and tied it securely about an inch from the umbilicus; I then carefully passed the scissors near where it was tied, examined well to see that there was no member in contact, and, dividing it, placed the infant in the blanket, and passed it to the nurse.

I left the patient about twenty minutes in the same condition, and watched her attentively, to see if there was flooding, or any pain to expel the placenta, which was still retained: there being none, I proceeded to remove it. With the left hand I took hold of the cord, passed the fore and middle fingers of the right hand up the vagina, and requested an attendant to lay her hand on the abdomen and gently press downward, while at the same time I directed the patient to retain her breath and to press down. I now made gentle extension on the cord, and at the same moment seized the edge of the after-birth with the fingers. These four propelling powers united disengaged it with the greatest facility. It is customary to place the placenta in a "chamber," and have it buried, or thrown into the privy; but in this case, as I wished to preserve a specimen for my museum, I washed it in several waters, brought it to my office, and put it in alcohol.

I then ordered all the wet cloths, blanket, and sheets, to be removed, placed in a tub, and taken from the room; the parts to be washed in a little warm spirits-and-water, to diminish the irritation; and afterward a warm dry towel to be applied, to absorb the lochial discharges; subsequently, a bandage to the abdomen. The wet cloths were removed as follows: two persons, one on each side of the female, with her arms over each, raised her up, while a third removed the cloths. If the muslin or any other part of the cloths be wet, the whole must be removed, and dry ones substituted, otherwise the cold moisture occasioned by the discharges may produce a check of perspiration, followed by fever. Many physicians

endanger the lives of their patients by suffering them to lie for a length of time in the same wet and uncomfortable position in which the child has been born.

This, then, completed my duties for the present toward the patient; and I now directed my attention to the infant, giving directions to the nurse what the treatment should be, as some nurses are at a loss, or ignorant of their duty in this respect. I advised her first to bathe the whole surface with a little sweet-oil before washing it with soap-and-water. Next, a compress, with a hole in the centre, was placed on the umbilicus, the cord put through the opening, and over this a muslin bandage; the dress was then fitted on the child, which I directed should be much lighter and looser than ordinary, the clothing being generally too thick and cumbersome, as well as fitting too tight, which exerts an unhealthy influence on the infant.

In every case of child-birth, the nurse or some one else proposes with great zeal the administering of some medicine to the infant—usually molasses-and-water—"to expel," as one said, "the *economy*," meaning the *meconium*. In this instance, the nurse proposed the same, to which I objected, stating at the same time that the mother's milk was the best and only proper medicine for the child, and that it should be put to the breast in a few hours.

The patient, now free from pain, fell asleep; and the labor having been thus favorably and happily terminated, I took my leave, with the thanks and congratulations of the friends.

Next day I paid a visit to the woman, and found her in a very excellent state: no flooding, pain, or fever; appearance and feelings almost as natural as ever. I directed a mild purgative to be administered on the following morning, it being the second day after delivery, and the bowels subsequently to be kept regular; the diet to be light and nutritious, the room of a proper temperature, with very little company or conversation.

In two or three days I called again, and found all the symptoms so favorable, that I considered it unnecessary to repeat my visits.

I take this opportunity to remark that physicians generally are in the practice of and recommend frequent and attentive examination of the abdomen for various reasons; but I have never deemed this necessary: an examination to see if there be twins is usually quite sufficient. This practice, which indeed is recommended by most authors, appears to me to be an interference uncalled for, and constitutes what one writer terms "meddlesome midwifery."

In concluding my minutes of the preceding case, I will state that, in all the labors I ever attended, I never found one which, from beginning to end, terminated so favorably; and it has been a question in my mind whether I ought not to impute it to the free use of the mucilage of slippery-elm bark for three months before confinement.

I have thus given the details of the management of the above case more particularly, that the young student or midwife may learn every step in the progress of a natural labor, as well as to illustrate the preceding rules on this subject: all which, together with the plates, are quite sufficient, with a little practice, to render every one of ordinary capacity proficient in the art of midwifery.

CHAPTER VI.

DIFFICULT LABOR.

SECTION I.

DEFINITION AND CAUSES OF DIFFICULT LABOR.

By *difficult labors*, I mean all those labors which, although the head presents, are not accomplished with ordinary facility, and are protracted beyond the average duration, or are attended with unusual suffering.

The *causes of difficult labors* are very numerous, but it is unnecessary to treat of each of them separately; for this purpose they may all very conveniently be divided into two classes:—

1. All those causes which *lessen the force of the expelling powers*.
2. All those causes which *increase the resistance to the passage of the fœtus*.

First, then, we shall treat briefly of those causes which lessen the force of the expelling powers, and thus produce *inertia or debility of the uterus*.

By this, of course, we do not mean absolute inaction of that organ, since that would preclude the idea of all power; but we mean an imperfect, irregular, and inefficient contraction, inadequate to expel the child. This state may be produced—

1. By general weakness of the constitution, arising from disease not necessarily connected with pregnancy, as consumption, and convalescence from fevers or other debilitating diseases. But at the same time it should be remembered that, while difficult labors sometimes depend on general feebleness of the constitution, yet they do not necessarily follow: for we occasionally see women in the last stage of consumption or typhoid fevers expel their children with ordinary facility, even but a few hours before their own decease. Yet, sometimes these debilitating diseases become the cause of action after premature excitement.

2. It is occasioned at times by *over-distension of the uterus*, combined with extreme thickness of the membranes, which produces paralysis of the womb, as over-distension of the bladder produces paralysis of that organ. This may be caused by superabundance of the liquor amnii, or by dropsy of the decidua or of the chorion, called, when it occurs, *the false waters*. When inertia arises from this cause, which may be presumed in the absence of all others, the abdomen will be unusually large, and the os uteri pretty well dilated or dilatable.

3. Sometimes it may be produced by *too early evacuation of the liquor amnii*, which is occasionally known to take place some days or even weeks previous to the commencement of labor-pains; and in other cases it occurs at the beginning of the first stage of labor: this is caused by bringing the hard head of the child to dilate the os uteri, instead of the soft, wedge-like, dilating power of the liquor amnii in the membranes.

4. Again, it may be caused in some instances by very sudden and powerful affections of the mind, such as fear, anger, joy, &c. These at times so strongly affect some individuals, as to produce a complete suspension of their pains.



SECTION II.

TREATMENT OF DEBILITY OF THE UTERUS.

THE best general treatment, and that which ought always to be first administered, and which likewise should accompany all other remedies, is, patience and sympathy, with cheerful and encouraging conversation. Especially should the intelligent practitioner aim to inspire the patient with confidence in the goodness of Divine Providence, and the ample resources of nature which he has established.

Where inertia arises from debility of the constitution, the patient's strength must be supported. This will be best effected by mild nourishment, as gruel, arrow-root, panada, chocolate or cocoa, chicken-broth, &c. If the pulse be very feeble, add a little wine.

If there be found great irritability of the nervous system, with inefficient uterine contractions, whether it arise from original inertia, from reaction following premature excitement to hasten labor, or from too free use of stimulants, give from ten to twenty drops of laudanum, which may be repeated if necessary.

In a great many cases of inaction arising from the weak expulsive power of the uterus, the resistive power will be found to be yet weaker. In such cases, Nature will generally perform her work, and delivery will be effected with but little assistance from art.

To know *how to wait*, and *when to wait*, in cases of inertia, is a strong mark of a judicious practitioner. We should cheer up such a patient; and if there be any one in the room who acts differently, do not allow her to remain, or the inertia will most likely increase. Sometimes labors of this character will last for several days. Generally such a patient has no appetite, and is exhausted from want of nourishment. When this is the case, tempt her appetite with any kind of nourishing food she may fancy; but do not give her stimulants, unless she is accustomed to them, or her great debility indicates their necessity: then a little will be of service, taken in connexion with some nourishing food. Warm diluent drinks will frequently arouse the dormant powers of the uterus. Gentle friction on the abdomen, frequent change of position—any or all of these may be tried in succession, and they will often be attended with success. If she is inclined to sleep, let her be indulged. If it is at night, sometimes it is good to give an anodyne to promote sleep where there are few or no pains; but do not give her too much, or it may produce a comatose state: nor yet too little, for a very small dose of opium or laudanum will keep a person more awake than if we had not given anything. It should, however, be a universal rule never to give an anodyne in any form during labor, unless the bowels are free, either naturally or artificially, and it is clearly indicated. Average dose of laudanum, twenty to thirty drops, which may be repeated if necessary. The tincture of hop is still better. If, after she awakes, the inertness of the uterus continues, and there be no diarrhœa, give her a gentle aperient, followed by an enema of one or one and a half pints of common injection, or of warm water with a tablespoonful of salt dissolved in it. This, besides evacuating the bowels, will generally by sympathy arouse the dormant powers of the uterus to action. "A strong tea of bethroot and cohosh," says a botanic physician, "may now be given, which will frequently be attended with great success in exciting uterine contractions."

Should the above means, however, all fail, then it may be necessary to excite the contractions of the uterus by ergot.* But there are two things to which we must pay especial attention, if we ever expect to use ergot with any advantage to our patients or with credit to ourselves:—

1. We must see that the patient be in a *proper state for its use*.
2. That the quality of the ergot be good.

With respect to the state of the patient, we must remember—

* I give the rules for its administration, but of late years I have very seldom used it; and a question has arisen in my mind whether it would not be the better practice to dispense with it altogether, or at least in most of the cases where it is recommended. Sometimes it forces the child through the pelvis with such power as to destroy it, or lacerate the soft parts of the mother; at other times it has no effect at all; and in yet other instances it appears to exert a prostrating effect upon the nervous system. Occasionally, I have witnessed a very happy result from the use of it. Let it be still further tested. Notes should be taken of every case where it is administered.

1. That ergot should never be given until we know that the os uteri is fully dilated, and that there is no rigidity of the other soft parts; or it will be very liable to produce inflammation of the uterus, or laceration of the soft parts of the mother.

2. Never give ergot till you are certain that there is no deformity of the pelvis; or it may produce rupture of the uterus.

3. Never administer ergot in a case where the head of the fœtus is dropsical; or similar consequences will result.

4. Ergot should never be given in any preternatural presentation: always be sure that the head presents right before administering it.

5. Never give ergot if there are any convulsions or any strongly-marked head-symptoms.

6. Never give ergot while the woman's strength is greatly exhausted. If it is not given before then, it must be suspended until the strength is in some measure recruited, lest the exhaustion which it brings on be more than she can bear. The pains which ergot generally excites are very violent, long-continued, and without intermission, until the child is expelled.

But if the passages are well dilated, the os uteri fully open, and the head low down in the pelvis, with plenty of room—in fact, *if nothing but the want of pains prevent its expulsion*—we may use ergot with safety, and generally with great success. With these precautions, ergot may not do harm, but will always be found to be adapted to such cases of inaction of the uterus. Perhaps all the frightful stories which have been told, and the fearful consequences which have actually resulted from the use of ergot, have been derived from ignorance or neglect of some one or more of the above rules. Therefore, as before intimated, let it be further tested.

I have heard of some practitioners who are either so ignorant or so reckless, as to give ergot in almost every case, to expedite the labor, and thus save their time! Such triflers with human life and the future health of their patients ought to be discarded from society by every honest practitioner. Ergot certainly should *never be given at all*, where there is anything like an *average amount of uterine contractions or pains*; “in inertia of the uterus, given in subjection to the above rules, it may prove valuable.” If ergot, then, is capable of doing incalculable good or incalculable evil, whichever may be its result in our practice, will depend on the judgment and discretion with which we may use it.

Perhaps the best way to administer it is to take one drachm of the powder, pour over it half a pint of boiling water, let it stand awhile, and then give one third of it every twenty minutes till the pains are excited. Some prefer to give about twenty grains of the powder in molasses or honey every twenty minutes. Or the tincture may be given in teaspoonful doses, repeated every twenty minutes. It seldom requires more than two or three doses to excite uterine contractions; sometimes only one, if the ergot is of good quality. Where three doses do not succeed, it is generally useless to repeat, unless we can get a fresh sample.

Again, we should see that the ergot is good. It should be obtained as fresh as possible, as it deteriorates very much by keeping. It should be kept in the grains, and pulverized when wanted. If it is good, its odor when pulverized will resemble that of new-mown hay; that which is inert, or of inferior quality, has commonly a musty smell. Perhaps the best way to preserve it is, when we procure some of good quality, to tincture it for future use. In tincture it will preserve its virtues for an indefinite period. To make the tincture, put two ounces of the pulverized ergot into a pint of dilute alcohol: let it stand fourteen days, and strain it. It should be kept in a well-stopped vial.

SECTION III.

SECOND CLASS OF DIFFICULT LABORS.

THIS class embraces all those causes which *increase the resistance to the passage of the fœtus*. Here, there is no want of pains, but the resistive powers of the parts are too great to be overcome by the ordinary efforts of the uterus, and consequently cause great and long-protracted suffering.

1. Difficult or lingering labors may arise from *rigidity of the os uteri, vagina, or perineum*: either or all of them may cause a lingering labor. This condition may be produced by any cause which excites a febrile state of the woman's system, or local irritation of the parts: a hot state of the room; too many bed-clothes; stimulating drinks; costive state of the bowels; retention of urine from the child's head pressing upon the neck of the bladder, &c., are all causes which very frequently produce a general febrile excitement in the system, and rigidity of the soft parts concerned in parturition. Local irritation sufficient to produce great rigidity of the parts may be caused by too early rupture of the membranes, where the rupture is followed by active contractions or pains. This, by bringing the hard head of the child into contact with the mouth of the womb, instead of the soft dilating wedge formed by the bag of waters, will frequently excite irritation of the parts, and produce a state of local fever which will prevent dilatation, and occasion a tedious and difficult labor. Frequent and rude examination will often produce the same effect.

2. FROM MAL-POSITION OF THE OS UTERI.—Mal-position of the os uteri is not an unfrequent cause of difficult and protracted labor. The mouth of the womb, instead of being near the centre of the pelvis, may be found against either its right or left side, which during a pain forms an effectual resistance to the advance of the child. Sometimes its mouth projects backward against the promontory of the sacrum; and at others, though very rarely, the mouth of the womb projects forward above the symphysis pubis—when the head of the child is driven against the abdominal walls in the hypogastric region, instead of the axis of the pelvis. When the mouth of the womb is found in any of these positions, we may expect a difficult and protracted labor, unless the position be rectified either by nature or art.

3. FROM A FACE PRESENTATION.—In this presentation, labor is generally lingering, in consequence of the bones of the cranium not being capable of compression in this direction, and therefore yielding with great difficulty to the form of the pelvis. The child is usually born alive, but the lineaments of the face are wonderfully distorted, and sometimes they do not resume their natural appearance for many days.

4. FROM MECHANICAL OBSTRUCTIONS OF THE SOFT PARTS.—Labor is sometimes much protracted and rendered difficult from strong adhesive bands which are found in the upper or lower part of the vagina. These may be congenital, if it be a first child; or the obstruction may arise from adhesions or bands formed by previous inflammations of the vagina or neck of the womb, occurring either during a former labor, or being caused by other and subsequent inflammations. Sometimes polypi or other tumors (sarcomatous, steatomatus, bony, or watery) are found growing from the pelvis, the neck of the womb, or other organs of generation, presenting very serious obstruction to the passage of the child. Occasionally a diseased ovary will descend and obstruct the passage through the pelvis. Not unfrequently, too, the bladder, distended with urine, will be forced into the pelvis before the head of the child, which prevents its evacuation, retards the progress of the fœtus, and protracts the labor. Sometimes there is a vaginal hernia obstructing the passage, in which is contained a portion of the intestines or of the omentum.

5. DISPROPORTION BETWEEN THE PELVIS AND HEAD.—The pelvis may be smaller than usual, which is very liable to be found in tall women with wide shoulders and narrow hips; or the head may be unusually large from hydrocephalus, or perhaps be unyielding from the more perfect union by ossification of the bones of the cranium, and difficult and lingering labor be the necessary result.

6. **ANCHILOISIS OF THE COCCYGIS.**—This bone in early life is susceptible of considerable motion, and it increases the diameter of the outlet a full inch or more ; but in women who are not married till late in life it is apt to become ankylosed and unyielding, and thus retarding very much the progress of labor.

7. **DEFORMITY OF THE BONES OF THE PELVIS.**—At times there is found more or less deformity of the bones of the pelvis, altering its shape, and thus retarding or altogether preventing the passage of the child through its cavity. These may be caused by rickets in early life, *moletus ossium*, by fractures occasioned by falls or other accidents, either in childhood or after puberty.

SECTION IV.

DISCRIMINATION OF DIFFICULT LABOR.

Now, since difficult labor may arise from so many different causes, it must be obvious to all that the first thing for the practitioner to do when called to a difficult or lingering labor is, to ascertain, by very close and critical examination, to which of these several causes the difficulty in question is to be ascribed. Without this, if he attempts to relieve it, he will be *like a blind man groping in the dark*—quite as liable to injure the patient as to remove the evil. But if he be familiar with the anatomy and condition of the parts, he will find no difficulty, on a careful examination, in determining to what the obstruction in question (if extraordinary) is owing.

When the difficulty arises from rigidity of any of the soft parts of the mother, it may be readily detected by the finger on examination per vagina. If the evil be occasioned by rigidity of the os uteri, we shall discover on examination that, although the pains are strong, and perhaps have continued for a long time, yet that the os uteri is but little dilated ; and instead of feeling soft, thick, and spongy, like wet chamois-leather, or soft and thin, like wet brown paper, as it does in the early part of a natural labor, it is either firm, thick, and hard, like cartilage or sole-leather, or thin, firm, and rigid. Sometimes the os uteri will be found well dilated, but there will be great rigidity of the vagina or the perineum. In natural labor, both these are soft, cushion-like, exceedingly flexible, cool, and well lubricated with mucus. In rigidity of these organs, instead of this, the vagina will feel hot and dry, together with considerable firmness, narrowness, and want of distensibility—so much so, as sometimes to make an examination painful.

Mal-positions of the os uteri are likely to be overlooked, especially by young practitioners and others, who are not very critical in their examinations. The pelvis in these cases appears to be almost filled up by the head, and making rapid advance toward delivery ; yet it is not the naked head of the child which they feel in contact with the finger, but the anterior surface of the uterus, which may be known by the want of hair on the scalp ; and on a more minute examination we shall find the os uteri scarcely at all dilated, the opening almost beyond the reach of the finger, against the lateral or posterior walls of the pelvis, and the uterus spending its energies in fruitless attempts to expel the child.

In face presentations, the inequality of the presenting surface (the eyes, nose, mouth, and chin, which may be easily detected) serves to distinguish it from the breech, with which alone it can be confounded. Morbid adhesions of the vagina, bands passing across, or tumors, polypi, &c., are easily known. To distinguish these tumors from prolapsus of the bladder, introduce the catheter : if it be the bladder, it will disappear on evacuation. To distinguish them from hernia of the intestines, evacuate the bowels by enema, and it will disappear. By these means we shall not confound them, and the sense of touch will generally determine whether the tumors are sarcomatous, serous, or osseous.

Should there be disproportion between the head and the pelvis, it may be ascertained as follows : if the pelvis be smaller than usual, it may be known by introducing two fingers into the vagina, separating

them as much as possible after they are within, and thus gauging from the promontory of the sacrum to the lateral walls on either side, and from the symphysis pubis to the promontory of the sacrum. Notice the span of the two fingers, and we may thus measure with tolerable accuracy. If the head be unusually large from dropsy, *the fontanelles and sutures will be very much wider than usual*. To ascertain whether the coccygis is anhelosed, introduce the finger into the vagina, point downward, let the upper part rest against the arch of the pubes, feel with the tip of the finger for the point of the coccygis, and press downward and backward: if it is anhelosed, it will not give way under the finger; if otherwise, it will spring back perhaps an inch or more.

Deformity in the bones of the pelvis may be ascertained by introducing two or more fingers into the vagina, and passing them carefully round the entire circumference of the pelvis. To learn if there be any angle at the symphysis pubis, which is frequently the case, introduce two fingers and lay them flat behind the symphysis.

SECTION V.

TREATMENT OF DIFFICULT LABOR.

WHEN the difficulty arises from rigidity of the os uteri or other soft parts of the mother, or if the room be too warm, or the patient be clothed too much, regulate the temperature of the apartment and the quantity of the dress.

If the rigidity be caused by retention of the fœces, evacuate the bowels by a dose of castor-oil or other mild, aperient medicine, or administer a large injection of warm water or molasses-and-water, with salt.

When the rigidity is occasioned by retention of urine, the bladder must be evacuated by the catheter, if the patient be unable to void it, or it may burst and destroy her. To do this well, without exposing the woman's person, requires some tact (and the person should not be uncovered without the most urgent necessity); but, of course, it would be better to expose her person, if we do not know enough to perform the duty otherwise, than to leave her to perish, as would almost inevitably be the case.

There are several ways of performing this operation, some adopting one and others another mode—and it is of little or no consequence which is preferred, if it be skilfully performed. I have found the following to be the most convenient method: Place the woman in a sitting posture on the very edge of the bed, with her limbs apart (or across the bed on the back, with the thighs flexed on the abdomen, if she prefers it, or is unable to sit up from any cause), and her feet elevated on two stools; let some one be placed behind her to assist her if she be unable to support herself; the operator, standing before her, will now introduce the index finger of one hand under the clothes and within the vagina, carrying it behind the pubes: he will there feel the urethra, like a small hard cord; if he now draw the finger outward along the cord until the bulb arrives at the margin of the vagina, he will there observe a slight depression as the cord passes from under the finger; keep the bulb of the finger there, and take the catheter (previously oiled) in the other hand with the concave side uppermost, and slide its point along the finger into the depression; when it is entered, remember the position of the bladder in pregnant women, which usually projects over the pubis, and bear down the hand in which is the catheter toward the floor, more or less according to the pendulous state of the abdomen; when it has thus passed in about two inches, the water will begin to flow.

But if the bladder is forced down before the head of the child into the vagina, the catheter must be entered with the concave side downward, and the hand below the vagina; after it is entered, the hand must be elevated as it passes in; when the bladder is thus evacuated, the head can pass on. Then let the woman take her pains in the horizontal position; introduce the fingers within the vagina and carry the bladder above the head of the child, and keep it there during several pains, until the head has made some advance.

If the above means fail to remove the rigidity of the parts, as they sometimes will, it will be necessary to have recourse to more energetic treatment. *Bleeding* is the principal remedy relied on by practitioners of the "old school," to remove the rigidity of the parts: Dewees says, "Bleeding is a certain and never-failing remedy for rigidity of the soft parts;" Blundell, Burns, and many others of high authority among them, place implicit confidence in it. Professor Hamilton was accustomed to assure his class that he could always relax the os uteri by bleeding, and that he never allowed the first stage of labor to continue more than from twelve to fourteen hours, so completely had he the process under his control.

Now, although bleeding is certainly a very powerful means in procuring relaxation, yet it is *by no means a safe one*, and is frequently productive of serious evil. There is one great objection to bleeding at the commencement of labor, which, if there were no other (but "their name is legion"), ought for ever to prohibit its use—namely, the fact that the patient must necessarily lose a certain quantity of blood after the child is born, and we are in perfect ignorance how much that may amount to: fearful hæmorrhages after delivery, producing death, are by no means uncommon. It is therefore *a wanton risk of human life* to take blood from the arm at all during the stages of labor, because, if the quantity thus abstracted had been preserved in the woman's system, *it might have turned the vacillating beam of life in her favor, and thus snatched her from impending death.*

Injections of simple warm water, with no kind of stimulating ingredients in it, will be found very relaxing in these cases; or a warm, or perhaps a vapor bath; and nauseating doses of emetics, frequent fomentations to the parts, and anodynes, *will be much more safe and equally certain means of relaxing the rigidity of these organs.*

In retroversion or displacement of the mouth of the uterus, some of the "old school" in medicine recommend hooking the finger in the mouth of the womb and drawing it more into the centre of the pelvis. But this can seldom do any good, and may cause very great injury: the neck of the womb has frequently been lacerated by this means; besides, it is always difficult, and often impossible, to retain it in the centre of the pelvis, even if we succeed in drawing it there. The method which I prefer, which is vastly more successful, and free from all danger, is the following: When the displacement is *lateral*, let the patient stand erect, and suffer some pains in that position; if necessary, she may be supported by an assistant on each side. If this fail, let her lie on the opposite side, and use gentle friction on the fundus of the womb, slightly bearing it toward the centre of the pelvis, and the mal-position will soon be rectified.

If the os uteri project backward—which is a very common form of this difficulty, especially where the woman has borne many children, has a large pelvis, and a pendulous abdomen—in such cases, let the patient retire to bed, and take her pains while lying on the back, together with gentle friction and bearing over backward of the fundus of the womb.

In cases of face presentation, we must be very careful in our examinations, lest we injure the eye with our finger. Keep the parts cool and well relaxed; and, with time and patience, nature will usually effect the delivery, and without any instruments.

The treatment of mechanical obstruction of the soft parts will, of course, depend upon the character of the impediment. When the labor is obstructed by bands across the vagina, the child's head will usually rupture them, and, with patience and perseverance, a safe delivery will be effected.

A case occurred very recently in this city of perfect adhesion of the neck of the uterus throughout its whole length (caused by inflammation resulting from criminal attempts to procure abortion by instruments), which was opened by a guarded stiletto, and the woman safely delivered. When there are tumors in the vagina, growing from some of the organs of generation, sometimes they are small and do not prevent the passage of the child, but only render the labor more protracted. But occasionally they are found so large as to render delivery impossible without the intervention of some kind of instruments. It then belongs to the class of *instrumental labors*.

In cases of disproportion between the head and the pelvis—in anchilosis of the coccygis—and in

deformity of the pelvis—hopeless as these cases would at first sight appear to those who are not practically acquainted with the mighty resources of nature, especially where the woman is strong and healthy, we sometimes find these efforts of nature will be sufficient to force the child (with the head very much compressed) through the contracted or the deformed pelvis. Much, of course, will depend in such cases on the smallness and the compressibility of the head, and the strength of the pains.

It becomes us to be exceedingly cautious not to presume, upon light and insufficient grounds, that the distortion is too great to allow the child to pass through without the intervention of instruments; and more particularly when the question relates to the employment of the perforator, an instrument always incompatible with the life of the child. We ought in such cases to weigh every circumstance very carefully, and if possible procure the opinion of some other and more experienced practitioner than ourselves, before we place it among the class of instrumental labors. The existence of a human being depends upon our decision: we ought not therefore to decide but with the greatest and most prayerful deliberation and caution. It is always one of the most difficult points in such cases to decide upon the exact time when we can no longer trust to nature, but must have recourse to instrumental assistance. In considering how much suffering the patient can bear without constitutional or local mischief being the result, every practitioner will, in the individual case before him, be very much guided by his own judgment: no rule of time can be laid down, for one patient may be left unassisted for *sixty hours* better than another can for *ten*. We can therefore only state collectively those symptoms during the presence of which the patient may be left to nature, and also those symptoms and conditions which indicate danger: after which the general medical knowledge of every practitioner must inform him as to the weight which ought to be attached to the occurrence of one or more of these in any given case.

The patient may be safely left to nature while the vagina and os uteri can be kept cool, moist, and dilatable, by the relaxents before recommended in rigidity of the parts—together with the following conditions: while there is a regular recurrence of uterine action; the patient's strength unimpaired; her mind tranquil, with a disposition to sleep between the pains; able to void her urine; some perceptible progress in the labor, however slow; and the absence of all general fever or local inflammation.

But, on the other hand, where there is great heat and soreness in the vagina, notwithstanding the free use of the cooling and relaxing treatment recommended in rigidity; great disturbance and intense anxiety of mind; severe shivering, fits during the second stage of labor; frequent and constant vomitings after the os uteri is dilated; a cessation of *true uterine action*, after many hours' true labor, and the substitution of irregular and unproductive pains; the accession of general fever; violent pain of and continued soreness of the abdomen, rendered exceedingly tender to the touch; *offensive discharges from the vagina*; *low, muttering delirium*; a very quick and weak, or else a very low and sinking pulse, accompanied by clammy sweats—these symptoms indicate the presence of great danger.

In persons having difficult labor, whose constitutions have been weakened by former ill health, or by having suffered much and frequently in former labors, even without the accession of fever as enumerated above, we occasionally meet with great and alarming debility, prostration of strength, weak, failing pulse, and a countenance which must be known to every practitioner who is accustomed to see bad cases, but which I can not describe otherwise than by saying that *it bespeaks a want of power to resist disease*: this appearance is one of those points which can be learned only at the bedside of the sick; it would be absurd to attempt to describe it in words. In proportion, then, to the number and severity of the above symptoms, will be the danger of the patient; and unless artificial aid be timely afforded, the soft parts of the mother will suffer irreparable injury, or both mother and child will perish.

The irremedial injury of the soft parts (which is of but too frequent occurrence) is *recto*, or else *viscco vaginal fistula*, or both, than which no greater calamity can befall a living woman. Only for a moment conceive of the loathsome condition of a female with *the urine continually dribbling away every moment, or her fæces passing through the vagina!*

Yet this is a difficulty which not unfrequently results from the use of instruments. Dr. HASSELL related to me the following most flagrant case of mal-practice which came to his knowledge, by one of the

would-be-thought only scientific physicians, which occurred recently in this city. The doctor says he was called to see a woman at the point of death, who had just been given up by her physician. When he arrived, he perceived that it was indeed a hopeless case: the patient was reduced to a mere skeleton; she complained that she could not hold her water, but that it continually dribbled away from her, and that in this way (she imagined, because her physician had told her so) it was that her strength wasted away. On inquiry as to the length of time she had had this incontinence of urine, she replied, ever since her last labor, two years ago. She said she was in labor five days, but that no instruments were used. Dr. Hassell asked her if her physician had examined the parts. She replied that he never expressed a desire to; but that he had been giving her medicine continually for two years to stop the incontinence of urine, which he said was wasting her away, and which, if he could prevent, would cure her. Dr. Hassell, suspecting that a *vesico-vaginal fistula* existed, made the necessary examination, and found one *an inch long*, produced doubtless by inflammation and consequent sloughing of the soft parts, from the want of timely relief in labor, or perhaps merely from the absence of some relaxing medicines—for the child was at length born by the natural powers of the system: and this ignorant man-midwife, under the garb of science, had drugged the woman to death, under the pretence of curing a difficulty that all the medicine in creation could never even alleviate, much less cure—all her emaciation and death being the result of the long-continued and debilitating effects of medicine. Dr. Hassell says that this woman died in three or four days after he first saw her, *an immolated victim on the altar of licensed quackery and diplomatized ignorance!* Had such an instance of flagrant mal-practice occurred to a reformed physician (which God forbid!) he would have been tried for the outrage, and sent to the stateprison; and the grand “regulars” would, through the newspapers, have *trumpeted his exploits through every state, from Maine to California!*

When, therefore, from the symptoms above enumerated, the woman begins to sink, and nature has done all it can to effect delivery, art should step in and perform what nature has failed to accomplish. The case should be classed at once among *instrumental labors*; for the further management of which, see directions under that head.

CHAPTER VII.

PRETERNATURAL LABOR.

SECTION I.

DEFINITION AND CLASSIFICATION OF PRETERNATURAL LABOR.

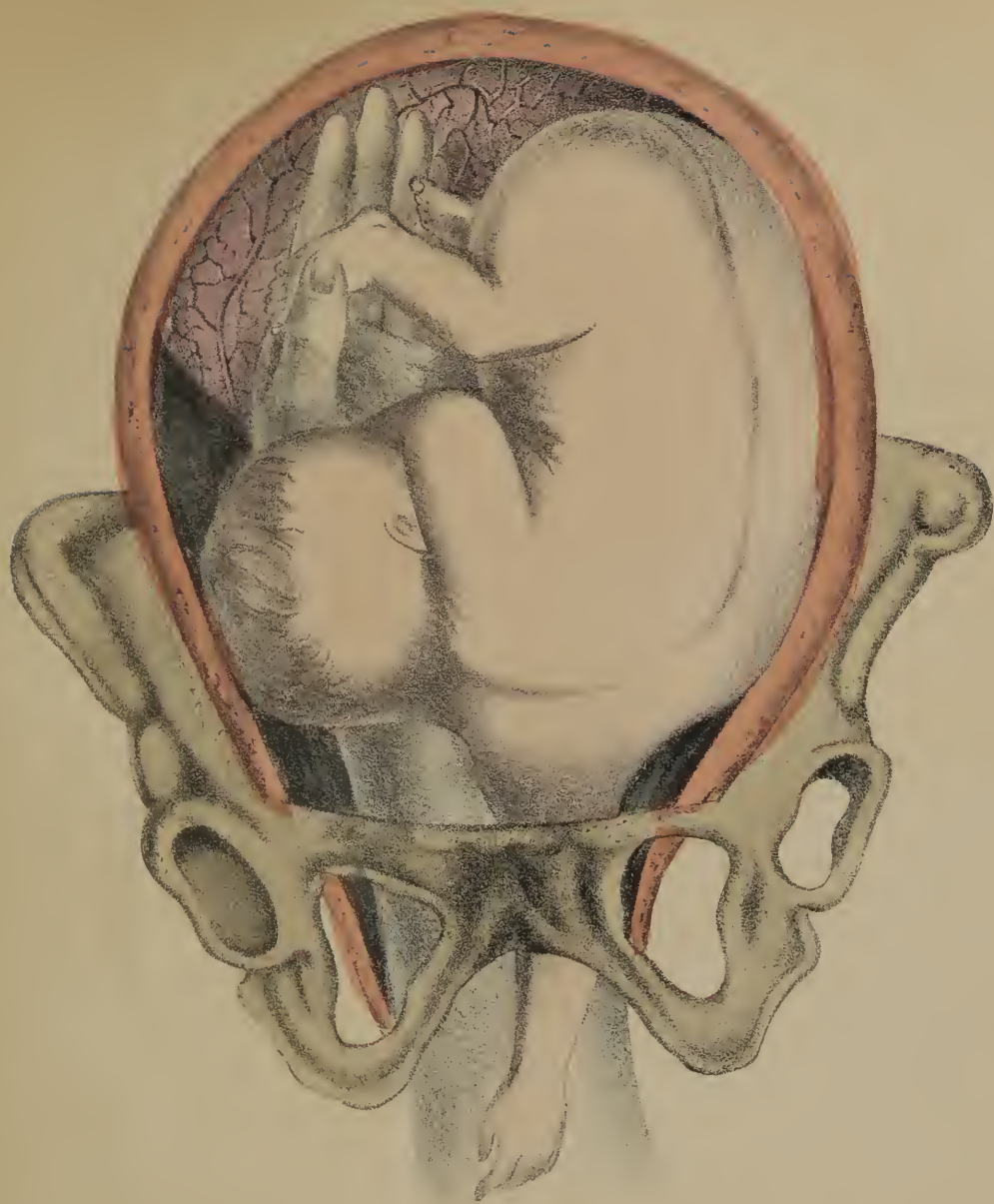
By the term *preternatural labor*, is meant all those labors in which *any other part of the child presents except the head*.

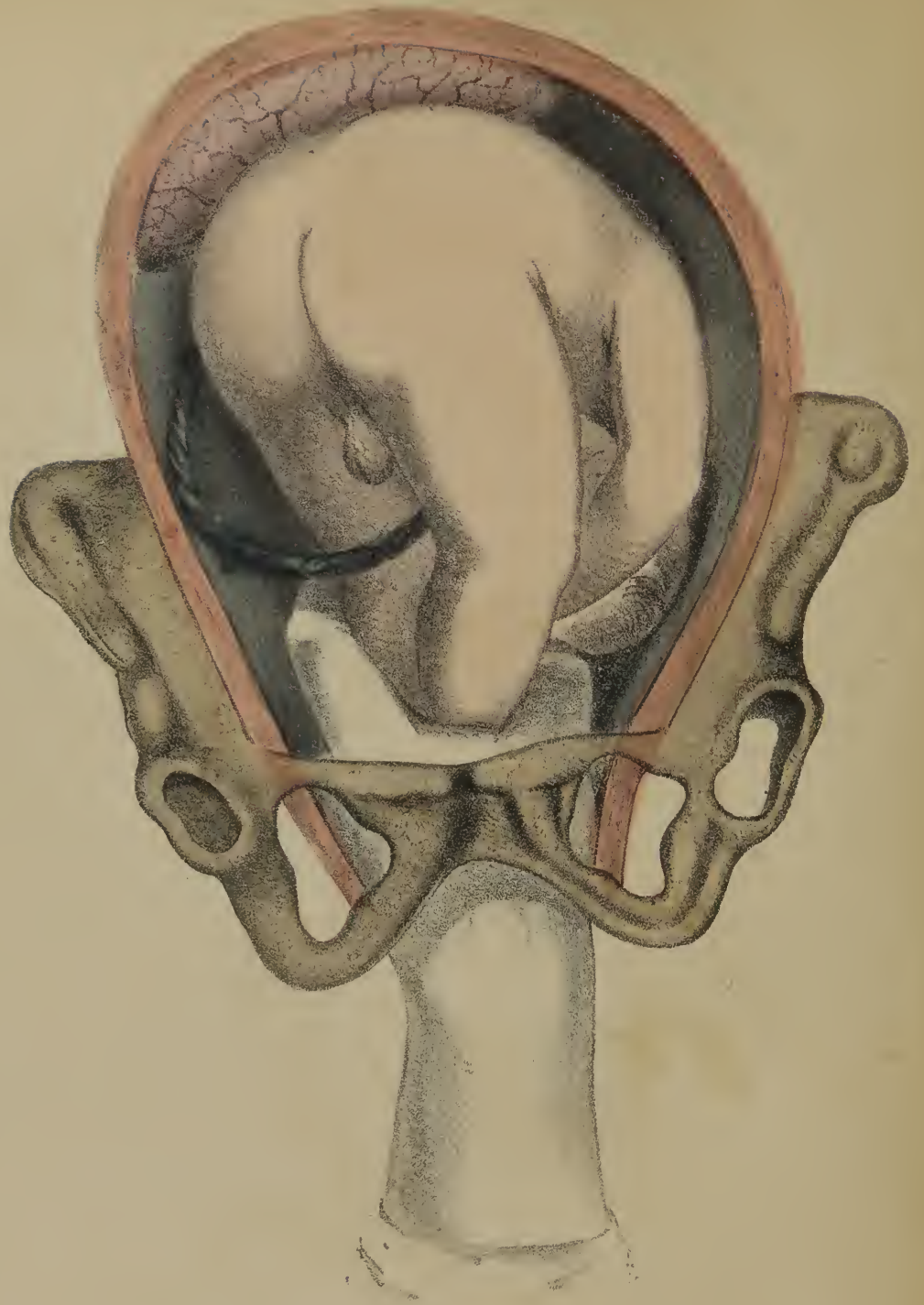
This class of labors is by many practitioners divided into a great many subdivisions, one for every actual or fancied position in which the child may present; but, for all practical purposes, they may be embraced under two subdivisions, viz. :—

1. All those cases in which some part of the *inferior extremities present*.
2. Those in which any part of the *sides, back, abdomen, shoulder, or the superior extremities, present*.

Either of these classes, in the common phraseology of the lying-in chamber, is termed a *cross-birth*, but, in strictness of language, it should be applied to the second alone, because it is the only class in which the child actually lies transversely in the womb.









SECTION II.

SIGNS OF PRETERNATURAL LABOR.

It is of the greatest possible importance to ascertain these cases in the early part of labor, especially those of the second class, as the golden opportunity for rendering efficient assistance, compatible with the safety of both mother and child, may be lost. Various signs of preternatural labor have been relied on by different practitioners—as peculiar motions of the child, singular shapes of the mother, slow progress of the first stage of labor, early rupture of the membranes, and many others—but the only certain information is to be gained by *examination per vaginam*.

Whenever, in the early stage of labor, we make an examination, and find the os uteri somewhat dilated, and yet are unable to detect any part of the child presenting, we have strong reason to presume that the head is not the presenting part. It is imperative that such a case be closely watched until more progress has been made, and we are able to feel the presentation; and as soon as that can be felt, we must ascertain with precision what that part is.

The best way to improve our tact in detecting the presentation early is, to give ourselves the habit of feeling the different parts of very young living or dead children, as opportunity may offer; and whenever we make examinations per vaginam, to proceed coolly and deliberately, and not to withdraw our finger if possible till we are satisfied. If, however, we can not satisfy ourselves during the first examination, we must wait a little while, and try again; and we shall by such means soon obtain sufficient dexterity to learn any presentation which may offer. (For the various sensations communicated by the touch from the different presentations of the fœtus in utero, see page 120.) Having diagnosed the presentation, and found it to belong to the class of preternatural labor, the next question is, “What is to be done?” This will depend on the subdivision to which they belong.

First, the treatment of those cases in which the breech or the lower extremities present: it may be the feet, the knees, the breech, or perhaps one foot or one knee.

SECTION III.

MECHANISM OF LABOR IN PRESENTATION OF THE LOWER EXTREMITIES.

IN presentations of the nates and lower extremities, most frequently the back of the child is toward the abdomen of the mother; at other times, the back of the fœtus is toward the sacrum of the mother: not that the back of the child in either case looks directly forward or backward, but obliquely, the breadth of the child passing in one of the oblique diameters of the pelvis.

In a breech presentation, one of the ischia (usually that which is most anterior, or nearest the pubes) descends the lowest, and therefore first meets the finger in examination.

The breech is generally transmitted through the outlet with one hip directed obliquely toward the pubes and the other toward the sacrum. The shoulders pass the brim with their breadth in the line of the oblique diameter of the pelvis; but in passing the outlet they have their position changed, being then inclined, the one toward the pubes and the other toward the sacrum. By this inclination, the head is brought through the brim with the forehead toward the sacro-iliac synchondrosis and the occiput toward the opposite acetabulum. The shoulders having been expelled, the face turns into the hollow of the sacrum: the chin is depressed toward the chest, and so escapes posteriorly; and, lastly, the vertex passes out from under the pubes.

Generally, I would observe, concerning all presentations of the inferior extremities, that if the pelvis

be of a natural size, and the parts cool and relaxed, Nature is fully competent to effect the delivery, and it should be left to her unaided powers as in natural labor.

But it will be always proper to inform the friends, especially the husband, that the child does not present naturally, although it will require no operation, and will not be attended by any unusual risk to the mother; but yet that the child may be still-born. Do not inform the patient of this, however: it will perhaps only dispirit her, without doing any good.

The reasons why breech and footling cases are more liable to be fatal to the child than vertex presentations, are chiefly because they do not dilate the soft parts so much. The head is the largest part of the fœtus, and when it passes first, it so effectually dilates the passage, that the other parts quickly follow. But in footling cases, each successive part that passes is larger than the preceding: the legs and thighs are smaller than the pelvis; these, in turn, are smaller than the shoulders; and these, again, are smaller than the head—which produces such great determination of blood to the latter organ, as frequently to cause apoplexy. Besides all this, the larger parts of the child passing last, and having still further to dilate the passage, exert such undue pressure on the umbilical cord as to stop the circulation, and thus cause death; the convulsive agonies of which are not unfrequently observed after more than half the body is in the world, and while the head is passing the brim of the pelvis.

When, therefore, the breech presents, the parts are more dilated, and the shoulders and head pass quicker than in footling cases, and consequently the child is more likely to be born alive.

Some practitioners recommend hooking the fingers in the groins, passing a fillet over them, or the blunt-hook, for the purpose of making traction and extension, in order to expedite the passage of the breech; but we shall do far better to leave it to nature: because the passages will thereby become more dilated, so that the other parts will pass with greater ease; besides, there is no danger from pressure on the cord until after the umbilicus is born, and the shoulders and head respectively enter the brim of the pelvis. Another reason why traction should not be made on the limbs and body of the child in the early part of these labors is, that the arms are thereby forced over the head, and increase the difficulty of the passage—an obstruction which seldom occurs when traction is not made. It is always better to leave these cases to nature until the umbilicus is born; then to draw down the cord a little, so as to keep it slack during the remainder of the labor: because the umbilical arteries being tortuous in the cord, their calibre is lessened when it is unduly stretched, and this may as effectually stop the circulation as the pressure of the head in the pelvis. But after the arms have entered the pelvis, there is no danger of their passing above the head, and we may then expedite the labor by gentle traction or extension during the pains; for so long as the cord pulsates, the life of the child is not endangered. Should the arms, however, from any cause, be unduly elevated, we must bring them cautiously down. To do this, we should pass the forefinger into the bend of each arm successively, gently sweep the forearm over the breast, and bring it down and out carefully, and not with a jerk, lest we injure the already-distended perineum. Take care that we make the arms sweep over the breast: if we make them sweep the back, we shall dislocate the shoulder, which it takes but very little force to accomplish.

Generally, the expulsion of the head will soon follow that of the body, the face turning into the hollow of the sacrum as in natural labor. If the head should not pass quickly, and the cord cease to pulsate, or its pulsations begin to intermit, or if we feel any convulsive motions in the body of the child, we must then hasten the passage of the head, or in a very few minutes the child will cease to exist. The best way to do this is, to pass the first two fingers of the right hand around the back of the child's neck so as to support it, and press it gently upward; at the same time pass the left arm under the body of the child, so as to bear it upward a little, and introduce the finger into the mouth and depress the chin during the pains, which are now almost constant; and, as the head advances, gently raise the back of the child toward the abdomen of the mother. By this manœuvre, we sometimes make a channel for the air to reach the mouth of the child, by which means it can breathe, and it has in many cases done so for a considerable time before the head is born, which will generally save its life. Besides, this manner will greatly expedite the birth of the head. Remember that the face first passes out in these presentations.

If we manage ordinary cases of breech, knee, or footling presentations, as above directed, we shall seldom have any very serious difficulty in these labors. But still, at the same time, it must be remembered that, as in presentations of the head, the labor may be rendered difficult by inertia of the uterus, or rigidity of the os uteri or other soft parts of the mother, we may have vesico or intestinal hernia; we may have tumors of various kinds in the pelvis; or we may even have deformity of the pelvis; in fact, we may have difficulty from any or all the causes which at times produce obstacles in presentations of the head. In all cases of this character, we must treat the difficulty as directed in our remarks under the head of *difficult labor*.

SECTION IV.

SECOND CLASS OF PRETERNATURAL LABORS.

THIS class comprises all those cases in which any part of the *side, back, abdomen, shoulder, or superior extremities, present*. We have included all these under one head, because, whichever of them present, the indication of treatment is the same. There is but *one universal rule in all these presentations*, and that is, to turn the child and deliver by the feet. The rule of treatment in this class is the very reverse of that enjoined in the first class of preternatural labors: for whereas, in that, interference in the early part of labor is peremptorily forbidden, in this second class it is as universally demanded.

It is true that in some very rare instances, nature has performed what is termed a *spontaneous evolution*, yet, when this has occurred, it has been in cases of premature births, at six or seven months, and where the pelvis has been unusually large. It is now generally agreed among practitioners that when the child is mature, we can not safely trust to this natural operation; and that it is incumbent on us in every such case to follow Nature, and perform that evolution which she always strives to effect, but is unable to accomplish after the foetus has arrived at maturity. If this be performed skilfully, it may be done with but little suffering or danger to the woman, and, if undertaken in due time, with certainty of success.

If we are called early, and on the first examination we suspect any of the above presentations, we should make them out perfectly as soon as possible, even if we have to introduce the whole hand to do it; but we must be very careful that we do not rupture the membranes. If the os uteri be not fully dilated, but dilatable, the pelvis natural, and the soft parts cool and dilatable, it will be better to place the woman in a horizontal position, that the os uteri may complete its dilatation with less risk of rupturing the membranes.

We should inform the friends concerning the presentation, and of the absolute necessity of turning the child; and, if possible, obtain the assistance and advice of a friendly and more experienced practitioner—not to do the work, but to recommend the proper course to be pursued in the premises, and to share the responsibility incident to that course. The advantage of such counsel is especially necessary in our first cases.

In the meantime, give a mild, unirritating, and emollient injection, to evacuate the bowels: warm water is as good as anything in these cases. Evacuate the bladder by the catheter, if you are not sure that it be empty; for on no account must this operation be attempted unless both these evacuations are effected, either by natural or artificial means.

Our assistants being in readiness, as soon as the os uteri is fully dilated, we must proceed to the operation of *turning*, as detailed in the following section.

SECTION V.

TURNING THE CHILD WITHIN THE PELVIS.

TO PERFORM this operation, the woman may be placed either on the edge of the bed, with a person behind to sustain her, and her feet placed on two stools, with an assistant on each side to keep her limbs apart; or she may be placed on the back, across the bed, with her hips on its edge, and her feet on two high stools, so as to flex her limbs well, and thus relax the abdominal muscles. The patient being thus placed, we may proceed coolly to take off our coat, make bare our arm, and anoint it well with sweet-oil or lard; sit down between her limbs, with a covering to protect our garments, and cloths on the floor to receive the secretions. Be cool and deliberate. Let our medical friend (if we are so fortunate as to obtain one) place his hands on the fundus of the womb, to steady it, and to keep up a gentle pressure downward. Introduce the fingers within the vulva in a conical form during a pain: this will cause considerable suffering to the woman while passing the sphincter of the vagina; but when that is passed, we shall find ample room, and the presence of the hand will then produce very little pain. Let the hand now remain stationary a little while, to dilate the parts, and to produce toleration of its presence. Now prepare to introduce the hand within the uterus; but this must not be done during a pain, lest we rupture the membranes before the arm sufficiently plugs up the vagina to prevent the escape of the waters. The fingers must be entered into the mouth of the womb in a conical shape, as they were previously introduced within the vagina, and then proceed very gently until our hand is fairly within the womb. The introduction of the hand into the womb will in all probability rupture the membranes, but the arm will now be so far advanced as to prevent the waters from escaping: however, if the membranes are not by this time broken, we should now rupture them. The hand must be kept perfectly still during a pain; but in the interval we should feel for the abdomen of the child: and, flexed upon it, we shall usually find the lower extremities. Seize hold of one or both of them, and bring them down; we must take care, however, that we do not bring down a hand and a foot, or the presentation will not be improved. Keep cool, and do not hurry. Some practitioners recommend us to bring down but one foot, and others one knee, because it then more nearly resembles a breech presentation, and gives the child a better chance for life; but, at all events, we must be sure that it is one of the lower extremities, if we conclude to bring down but one, or if we find that we can not easily obtain a hold of both.

Having obtained a firm hold of the limb or limbs, we must commence the withdrawal of our arm very gently during a pain. As we withdraw the arm, the waters will gush out, and, if our clothes are not protected, they will be soiled. The limb or limbs should be well brought down into the vagina. Some recommend to tie a fillet or narrow bandage round the limb, on which extension can be made to prevent its return; but this is generally unnecessary.

Now gently lay the woman in bed, and leave the case to nature till the umbilicus is born; then treat it in all respects as a breech or a footling case, for which see page 146.

It is not often, however, that we are so fortunate as to be called to a case of preternatural labor thus early; and should we be so called, it is not always that the parts are in so favorable a condition for the manipulation as we have supposed. Often the membranes rupture early, especially where the hand or elbow presents. Sometimes there is great rigidity and irritation of the parts; at others, the difficulty is not discovered until the hand protrudes through the vulva—the shoulder impacted in the pelvis—and the uterus excited to very powerful contractions. This is especially apt to be the case where persons, either male or female, have been in attendance who know but little of the mechanism of labor, or how to diagnose the various presentations: in all such cases we must proceed with great caution.

In cases of simple rigidity or irritation of the os uteri and soft parts of the mother, relaxation should first be produced by the means described in difficult labor (see p. 141); for on no account must we attempt to turn the child while these impediments exist: when they are removed, we can proceed as before directed.

When the membranes are ruptured before we are called, but the pains not yet very strong, the pelvis of the natural size and with no deformity, the os uteri fully dilated, and the parts cool, no time should be lost, but we must proceed to the manipulation immediately, as before directed. But when the waters are discharged, the uterus grasps the fœtus so closely, that it is difficult to perform a perfect evolution of the child: its body is apt to remain in a manner twisted in the womb. When this is the case, it will be of great service, after we have brought down the foot or feet, to keep hold of them, making gentle traction, while during a pain we introduce the other hand (with the fingers extended) along the lower side of the child till they arrive in the axilla, and then press them upward, so as to place the axis of the child's body, as nearly as may be, perpendicular with the axis of the womb.

But in those cases to which we are sometimes called, in which the labor has continued a great while—the membranes long been ruptured, and we find the child's arm protruding from the vulva, perhaps black and swollen, and the body of the child closely impacted in the pelvis, with the uterine contractions strong and sometimes violent—the first thing to be done is, if possible, to arrest the action of the uterus. This may generally be accomplished by full doses of opium. We need not be afraid of any deleterious effects from this drug so long as the pains continue; a large dose, however, given after they have ceased, or nearly so, may produce coma, with all its fearful consequences: but the quantity which may be given in regular and oft-repeated doses while the pains continue, without any injurious effects, is truly surprising. Besides arresting the contractions of the womb, the opium will usually produce very considerable relaxation of the uterus and soft parts; after which we can introduce the hand, and often succeed in turning the child, as before described.

Let the woman now be kept quiet. The operation will often again arouse the powers of the uterus, but sometimes not; when it does not, let the patient remain quiet until the effects of the drug have passed off: the labor will then be resumed, which must be treated as before directed.

But not unfrequently we meet with cases in which we are unable by any treatment to arrest the contractions of the uterus; or if we succeed in arresting them, the slightest attempts at manipulations will sometimes excite its powers to reaction, and it will grasp the child so firmly, that it is impossible to turn it. In such a case, we have no alternative, but either to leave the woman to the slender chance of spontaneous evolution, or proceed to embryotomy.

Whether we shall give her the chance of evolution, of course must depend upon the size of the pelvis and the period of pregnancy; and especially it must depend on the state of her system at the time. If she shows any of the signs of sinking or exhaustion, of which we spoke under the head of *difficult labor* (page 143), no time is to be lost if we would save her life. It becomes, of necessity, a case of instrumental labor. The child will be dead, any how; yet we must save the life of the mother if possible. But if her strength be good, and the above favorable circumstances exist, we should give her the chance of spontaneous evolution, slender as it may be; but watch her closely, and always remember that this, and every other operation, should only be resorted to as the last alternative.

CHAPTER VIII.

COMPLEX LABOR.

By the term *complex labor*, we mean all those labors in which some other malady occurs immediately preceding, during, or directly after labor, but which is not at all necessarily connected with parturition : the principal of which are—convulsions, flooding, syncope, retained placenta, rupture of the uterus, rupture of the bladder, prolapsus of the umbilical cord, premature descent of the hand, and plurality of children, &c.

SECTION I.

LABOR COMPLICATED WITH CONVULSIONS.

THESE may take place either during labor or a few hours before it commences : after the labor has terminated, or some months previous to its occurrence. This disease is characterized by insensibility, accompanied by convulsions, in connexion with pregnancy. The attack is preceded by a determination of blood to the brain, manifested by giddiness, headache, and singing in the ears ; sometimes sparks of fire seem to flash before the eyes, the mind wanders, and the vessels of the face and neck are turgid ; the face is swollen, there is an irritation about the pericardia, and sickness and pain in the stomach—making altogether a combination of symptoms from which much danger is to be apprehended. The fit is preceded and accompanied by a slow pulse, which sometimes sinks as low as fifty in a minute, and is also generally preceded by some or all of these symptoms ; but it sometimes comes on without any warning. During the attack, the eyes are turned upward ; the eyelids quiver ; the mouth is drawn to one side, and exhibits spasmodic twitches ; frequently the tongue is thrust out ; there is foaming at the mouth ; and the whole countenance is frightfully distorted ; the respiration is performed with a hissing noise, and the whole body is violently convulsed. This state continues perhaps for a few minutes, and then subsides. During the interval of the convulsions, the patient is generally insensible, and lies quiet and motionless, in a state of stupor. Sometimes she awakes from her lethargy, and complains of pain in her head or spine, gets up in the bed, and looks wildly about. If she is questioned, she shows no consciousness of what has occurred. After a time, varying from a few minutes to two hours, the symptoms just described are renewed.

If convulsions occur in any stage of pregnancy, contractions of the uterus also generally begin, and labor is the consequence. These alarming symptoms may also occur a few hours after the labor has commenced, which advances in consequence more rapidly ; the child is very soon expelled, and apparently without pains. Sometimes, as soon as the child is born, and the uterus empty, the symptoms just detailed cease, and the patient goes on favorably. But this is not always the case : experience shows that both the convulsions and the stupor may continue to succeed each other after the uterus is emptied, with little or no abatement. The convulsions may even *commence* after the labor is over. Some authors have classed this disease with epilepsy, but it differs essentially from that disease : epilepsy is dependent on morbid irritation in the brain ; this on morbid irritation in the uterus. Nothing has been found on examination after death in some instances to account for the fatal termination of this disease ; while in

others there have been found considerable turgescence of the vessels of the brain, with effusion or extravasation.

Convulsions occur under two extreme states of the system diametrically opposed to each other : the one in persons of a full and plethoric state of the system, in which the cerebral vessels are inordinately distended with blood ; and the other when they have been drained almost empty, as in cases of excessive hæmorrhage, and great irritability of the system ; and it is a very curious fact that these two perfectly opposite states will produce in this respect exactly the same phenomena. Depressing passions of the mind also frequently cause this complaint.

TREATMENT.—Inasmuch as the disease may be produced by directly opposite states of the system, it must be obvious to all that the indications of treatment should be of an equally opposite character. When it arises from depressing passions of the mind, great nervous irritability, or a feeble and delicate constitution, nervines, anti-spasmodics, and soothing measures, are indicated. But our first duty on the accession of a fit should be, to protect the patient from injuring herself by the violence of her struggles, and afterward to endeavor to prevent a recurrence of the paroxysm. Place her if possible on a bed, and let one or more persons hold her there, so as to preclude the possibility of her throwing herself from it, or striking her head or arms against any hard body.

Advantage must be taken of the depression of the lower jaw, which occurs at the commencement of each convulsive paroxysm, to insert some hard substance between the molar teeth, with the view to protect the tongue. A piece of firewood, which can generally be procured in an instant, will answer the purpose perfectly well ; it should be wrapped around with a handkerchief or a small piece of linen, and kept steadily in its place by an assistant till the end of the fit : if allowed to slip out for a moment, the jaws may be violently closed, and extensive injury sustained. I have many times known the tongue so swollen by inflammation consequent on laceration, as to prevent the patient from closing her mouth. When the convulsions occur in a patient of plethoric habit, or where there is great turgescence of the blood-vessels about the head, face, and neck, the indication is, to lessen the quantity of blood in the system, and equalize the circulation : not, however, by abstracting large quantities of blood from the veins, by bleeding to the amount of forty to sixty ounces, several times repeated, as recommended and practised by the “old school” — thereby producing the opposite state of the system, which is frequently the cause of convulsions, and can only tend to perpetuate them. This they call their *sheet-anchor*. It is indeed an anchor, whose flukes hang firmly on to the grave, and often envelopes the patient in a winding-sheet !

The treatment on which I rely, and which I know is vastly more successful than copious and oft-repeated bleedings, is the following : Apply ice to the head, and mustard-draughts to the feet, between the shoulders, and over the stomach ; or the feet may be immersed in hot water in which is infused plenty of mustard, and the heat of the water kept up by frequent additions ; one, two, or three drops of Croton-oil, according to its strength, mixed with a little butter, may be inserted in the back part of the mouth when the patient can not swallow ; also large enemata, in which anti-spasmodics may be infused, when they can not be taken by the mouth : these to be repeated until full and free evacuations are produced, which must be continued until all the symptoms of convulsions have ceased ; and hot bricks, covered with muslin or flannel dipped in vinegar, may likewise be applied to the feet and lower extremities to produce perspiration.

It must be a *hopeless case* that this treatment will not cure. When there is considerable extravasation of blood in the brain, no treatment will cure ; but we can never be certain of this extravasation during life : and therefore we ought to use the best means of remedy in our power, and calmly await the result.

Some authors recommend expediting the delivery by the forceps, perforator, &c. ; but I consider this in every case to be bad practice, because there is no certainty that the convulsions will cease on delivery, and the manipulations necessary to expedite delivery frequently aggravate the convulsions. Besides, owing to the violent contortions and struggles of the woman, irreparable injury is often done to the structures of the mother.

The treatment, then, on which I should rely, is powerful evacuants where the vessels of the head are turgid, or the patient plethoric, with counter irritations and sudorifics; anti-spasmodics in all weak, nervous, and irritable patients; equalize the circulation in all.

SECTION II.

LABOR COMPLICATED WITH FLOODING.

HÆMORRHAGE is by far the most frequent complication of labor. It is a complication which is at once common in its occurrence, alarming in its nature, and fatal in its effects; and consequently calls for our most anxious and serious attention. Although copious hæmorrhage is always greatly to be dreaded, yet in practice we ought not to regard so much the quantity of blood that flows, as the effect which the loss produces on the constitution of the patient; for it is found that different women vary remarkably in their ability to bear up against the results of hæmorrhage. It is truly surprising to notice how slight a degree of depression will follow an excessive flooding in some women, and how small a discharge will destroy others: so that the quantity which would constitute a dangerous hæmorrhage in one constitution would produce but little alarm in another.

Besides the *quantity* of blood lost, the danger to the patient depends very much on the *rapidity* with which it flows. If a pint escape at one gush, it is usually followed by a state of faintness, and perhaps complete syncope; but a slow draining may go on for a considerable time, until in the whole many pounds may have oozed away, with but little constitutional disturbance. And this difference may depend on two circumstances: in the first place, the arteries through the entire body, by the power of contraction inherent in their structure, accommodate themselves in diameter to the decreased quantity of their contents: this diminution of calibre they have an opportunity of effecting when the blood drains away slowly, but not when it passes out with great rapidity; and, secondly, at the same time that the discharge is going on, fresh blood is also formed by the assimilation of nourishment, and thus the deficiency is in part supplied, and a more equal balance of the circulation kept up.

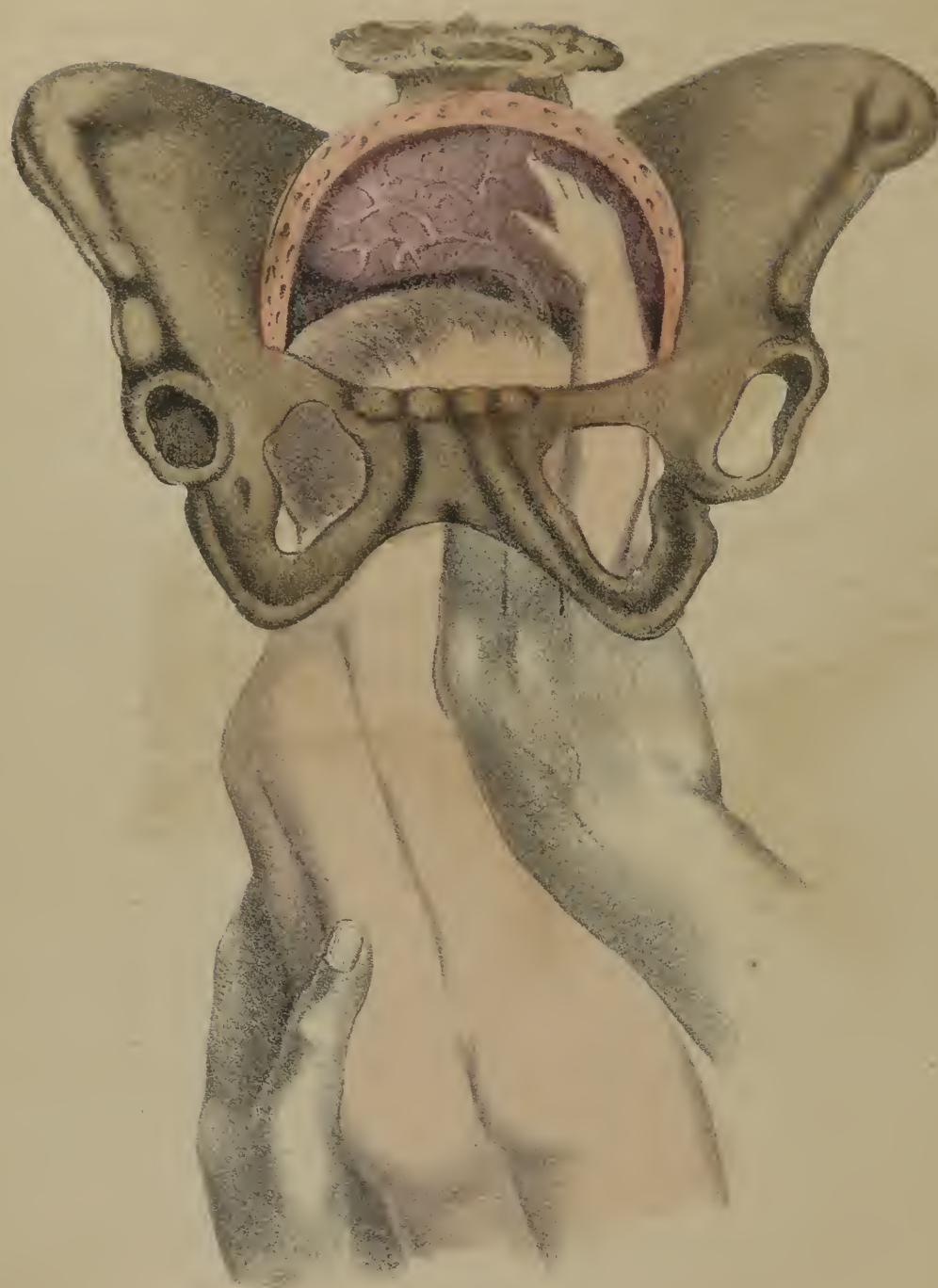
When a woman floods in labor, it is very seldom that the discharge will continue with the same impetuosity until death supervenes; but the patient faints, and rallies, and faints again, until at length a perfect syncope will paralyze the senses, deaden the nervous energy, and put a stop for ever to the action of the heart. Occasionally, indeed, one tremendous burst takes place, which so completely depresses the system, that a mortal faintness at once occurs: the heart and sanguiferous vessels become so rapidly emptied, that they possess no longer the power of contracting upon their diminished contents so as to propel them onward; and thus, after making some vain and futile efforts to keep up the circulation, their action entirely ceases, never to be restored, although this is comparatively rare. Sometimes, again, a slow draining will go on for a length of time, the faintness increasing with the loss of blood, the heart's action never being perfectly suspended during the continuance of the discharge, and the first attack of syncope will be fatal.

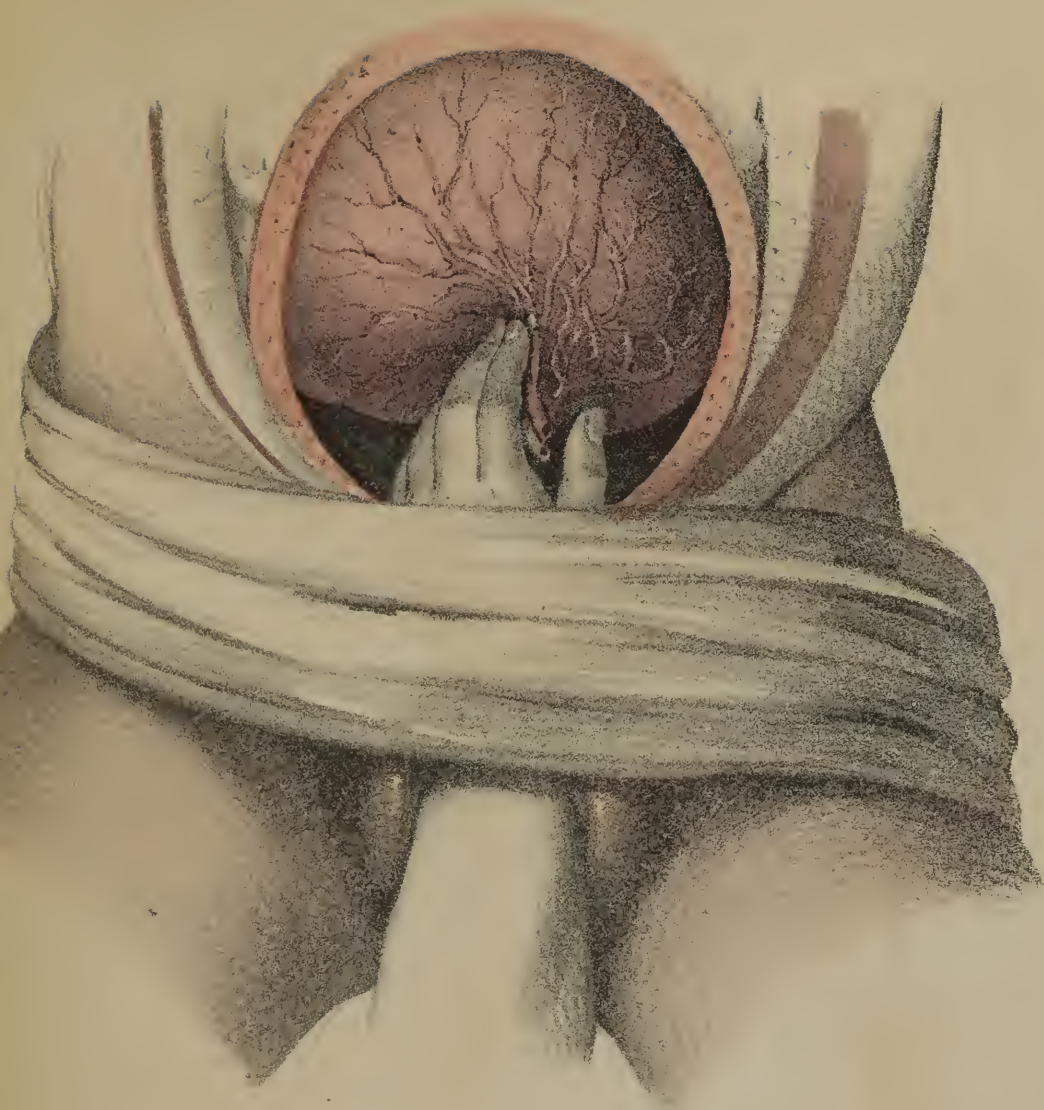
Hæmorrhage may occur previous to, during, or after labor:—

First, of hæmorrhages occurring during pregnancy, previous to labor. These may be again divided into three classes, viz.:—

- (1.) Hæmorrhage occurring during the early months of pregnancy, usually called *abortion*.
- (2.) Hæmorrhage occurring from the sixth to the ninth month of pregnancy, usually called *miscarriage*.
- (3.) Hæmorrhage occurring at the full period of gestation, just previous to or at the commencement of labor:

1. ABORTION.—This is always accompanied by a loss of blood, to a greater or less extent. Sometimes the quantity lost amounts to a fearful hæmorrhage; at others, it is very small.





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The cause of the hæmorrhage is always a partial or total separation of the placenta from the uterus. But the causes of the separation of the placenta are exceedingly various—such as constitutional debility; menstruation during the early months of pregnancy; fluor albus; hereditary diseases; secondary syphilis in either or both parents; falls; frights; depressing intelligence; excessive fatigue; heavy lifting; drastic purges; excessive venery, &c., &c.

The symptoms of abortions are, a frequent desire to pass urine; tenesmus; pains in the back, abdomen, and groins; with a considerable sense of weight in the region of the uterus. But the most certain sign of all is, a discharge of blood from the uterus through the vagina, because it proves that some part at least of the placenta is separated from the uterus.

It is said by many practitioners that when this last symptom appears, there is scarcely a possibility of the patient proceeding in her pregnancy. But I have met with a number of cases in practice, in which, notwithstanding this symptom, the progress of abortion has been arrested, and the woman carried the fœtus to the full term of pregnancy. Sometimes these symptoms will continue for several days, and at length there will be discharged a quantity of water and coagulated blood, mingled with which will be found the ovum or embryo.

TREATMENT.—The object of treatment at the first should be, to arrest if possible the abortion, and thus enable the woman to carry the embryo to the full period. In order to do this, first give an anodyne (as tincture of hop, or opium in some of its forms) to allay the uterine and other pains; and rub the abdomen and spine with some stimulating liniment, as the tincture of capsicum. The woman must remain perfectly quiet, and in a horizontal position. The bowels should be kept regular by a mild injection, cold fomentations over the hypogastric region, cold injections, ice, &c. When, however, the pains continue, notwithstanding this treatment, and on examination per vagina the membranes protrude with every pain, abortion will certainly take place. When the flooding is very considerable or long continued, and the ovum not delivered, the hæmorrhage will usually continue under any treatment, unless the embryo is extracted. To do this, pass up the fore or longest finger as far as possible within the neck of the womb, until it comes in contact with the ovum; then bend the finger in the form of a hook, and seize it; and instruct the patient to hold her breath and to press down, as during the expulsion of the placenta: by these means the ovum may commonly be extracted, and, the cause of the hæmorrhage being removed, the effect will cease. But if it can not readily be extracted by the above means, these measures must not be long continued, since repeated attempts to extract by force may excite inflammation of the parts. It is much better to leave it to nature, at the same time using all suitable means to suppress the hæmorrhage until the embryo be expelled, either by nature or art. If the embryo be not expelled within a reasonable time, and the hæmorrhage becomes alarming, ergot given in twenty grains at a dose, and repeated if necessary, may soon effect the expulsion of the ovum, and insure the contractions of the uterus: and thus effectually arrest the hæmorrhage.

2. PREMATURE LABOR, attended with hæmorrhage, and hæmorrhage preceding and accompanying labor at term.—These are produced by one or other of the following causes: first, by a partial or total separation of the placenta from the uterus; or, second, by the placenta being situated over the os uteri. Examination per vagina will determine to which of these causes the hæmorrhage in question is to be ascribed. If it be from placental presentation, of course this part will be in contact with the finger at the os uteri instead of the membranes.

TREATMENT.—When the hæmorrhage arises from a partial or total separation of the placenta, the refrigerant means spoken of before may be used; if these do not arrest it, and the os is dilated or dilatable, the membranes must be ruptured, which will evacuate the water, and allow the uterus to contract more, and thus diminish the size of the orifice of the bleeding vessels. If the contractions are feeble, and there be nothing to contraindicate, ergot may be given to expedite the delivery, and, subsequently, to contract the uterus. If it fail, give two grains of opium and four of capsicum combined every hour.

When the placenta is situated over the mouth of the womb, as soon as the os uteri is dilatable, the child must be turned and delivered by the feet (the manner of doing which has already been described

under preternatural labor). When the hand arrives at the os uteri, by insinuating the fingers between the placenta and uterus around the os, we shall find if there be any part that is not fully attached. Sometimes one edge barely covers the os: in such cases, the hand must be introduced through this part; if no such partial separation is to be found, the placenta should be perforated by the fingers. If the hand be passed through the placenta, it will come directly in contact with that part of the child which presents. But if we separate the placenta to the edge, the hand will be on the outside of the membranes, which must be ruptured before we can lay hold of the feet of the child. No regard is to be paid to the part of the child which presents, as it must always be delivered by the feet. The feet being brought slowly into the pelvis, we must wait till the uterus is contracted to the body of the child, which will soon take place, and is known by the application of our hand to the abdomen.

The contractions of the uterus may be excited by the use of ergot. It should be given in a full dose a few minutes before the hand is introduced, and repeated when the hand is entered, unless the pains are excited. Thus given, it may expedite the delivery and suppress the hæmorrhage, by which the patient might otherwise be destroyed. The delivery must then be terminated very slowly, to give the uterus time to contract as the child is withdrawn from its cavity. An assistant may make moderate pressure on the abdomen, to aid the contractions of the uterus, and thus prevent all ill consequences from the sudden emptying of the abdomen.

As soon as the child is born, the hæmorrhage will generally cease, if the operation has been performed slowly; but if the delivery has been effected very rapidly, and the womb be not well contracted, fearful hæmorrhage may result. It must then be treated as hereafter to be described in *hæmorrhage with retained placenta*. Should no other uncommon difficulty attend the delivery, the child will be often born alive, even in cases of hæmorrhage which are accompanied by the utmost danger to the mother—sometimes, in fact, after her death.

3. HÆMORRHAGE AFTER DELIVERY.—This may occur before or subsequently to the delivery of the after-birth: it may be internal or external. But whichever form it assumes, a want of contractions is the cause. Where the womb is well and permanently contracted, no dangerous hæmorrhage can happen. Flooding after delivery, then, is kept up by a torpid state of the uterus, thus preventing it from contracting with sufficient force to close the mouths of the bleeding vessels. The effects of the loss of blood are the same, whether the hæmorrhage be internal or external; and any one acquainted with the consequences of the loss of blood will easily detect the symptoms, even where there is no external hæmorrhage: it may occur not only from a want of contractions of the vessels, but also from some portion of the placenta remaining attached to the uterus. In either case, very alarming symptoms ensue, which call for prompt interference. If the placenta has not been removed, it must be cautiously extracted, and gentle friction made on the abdomen, to excite the contractions of the uterus; likewise cold applications to the abdomen, or a stream of cold water let fall upon it; an injection of cold water; cold water may be drank; an infusion of *gezanum maculatum* is very good; ergot, to excite the contractions of the uterus; and the following pill is also excellent: pulv. opium; capsicum gr. 4.

A melancholy case of death from hæmorrhage after the birth of the child took place in this city, in the person of Mrs. Andrews (the wife of one of our most respectable citizens, confined with her first child). The following is the history of the case, as communicated to me by the husband and the nurse: The labor was tedious, but there was nothing special to excite alarm. After delivery, the nurse observed symptoms of flooding, and mentioned it to the attending physician, who sat on the opposite side of the room; but he paid no attention to it: this was repeated several times, with the same result. At length the friends became very much alarmed, and went to the doctor, stating that they were afraid the hæmorrhage was so great, that it would prove fatal if nothing were done. The physician was appealed to, to know whether this was not the condition of the patient: he replied in the negative, without even an examination to see whether it was the case or not. He continued in the room for three or four hours, at a great distance from the patient, "waiting," as he said, "for the expulsion of the placenta." And though there were marked symptoms of sinking and prostration, the doctor did not appear to be conscious

that it arose from hæmorrhage. The patient continued to sink, and the friends becoming more alarmed, requested another doctor. The moment he arrived and saw the case, he removed the placenta—what ought to have been done at the first; but the patient had not strength to rally: she rapidly sunk; in short, she had bled to death! The certificate given to the coroner was, that she died of hæmorrhage; but afterward, when the friends expressed their dissatisfaction at his practice, he said her death was not caused by hæmorrhage, but by exhaustion!

If the history of this case as related to me be correct, it is one of the most flagrant instances of *mal-practice* I have heard of for several years; and had a reformed physician been guilty of such gross neglect, he would have been prosecuted for the outrage against professional science, and his name blasted for ever. But the patient was killed *secundem artem*, and her destroyer roams at large. In all human probability, if the placenta had been removed at the commencement of the hæmorrhage, the victim would have been a happy wife and mother, instead of a tenant of the silent tomb, leaving a bereaved husband and an orphan child through life to mourn her loss.

There can be but one opinion among all good accoucheurs of the old or new school in cases of this kind: all will unite in enjoining (whenever the placenta is retained and hæmorrhage occurs) the necessity of immediately removing it with prudence and caution; and to condemn in the most unqualified manner the conduct of any man who would sit three long hours during hæmorrhage from the uterus, without even an attempt to extract the placenta, or in any other way to arrest the bleeding! It seems incredible that any physician, pretending to even the slightest information and skill, should thus wantonly trifle with human life.

SECTION III.

LABOR COMPLICATED WITH SYNCOPE.

THIS may arise either from hæmorrhage or rupture of the genitals. Syncope is not unfrequently met with in the two extremes of society. It occurs among women in the higher ranks of life, who are of a delicate, nervous, and hysterical constitution. It is also not unfrequently met with in the various abodes of poverty in our large cities, where a want of proper ventilation and sufficient nourishment, combined perhaps with an habitual use of ardent spirits, have conspired to destroy the vigor of the system, and incapacitate it to bear up against the exertions attendant upon labor, especially when it is accompanied by any unusual sufferings.

Such attacks of syncope most generally follow rapid labors; and those patients who are of a relaxed fibre, and whose minds possess a gloomy turn—but more especially those who have entertained deeply-rooted apprehensions with regard to their recovery—are most usually the subjects of this dangerous affection.

TREATMENT.—In all such cases, arising from either of the causes above mentioned, the vital powers must be sustained at a healthy point by the stimulus, either of warmth, fresh air, and easily-digestible nutriment, or by the judicious use of wine, spirits, or some stimulus which serve to offer the most effectual means of restoring the tone of the circulating system.

SECTION IV.

LABOR COMPLICATED WITH RETAINED PLACENTA.

WHEN the placenta is not expelled within an hour after the birth of the child, it is termed a *retained placenta*. This may take place without hæmorrhage. It is usually expelled in less than an hour—frequently in from fifteen to thirty minutes. But no patient ought to be left before the placenta is brought away, because, although there may be no existing hæmorrhage, a most dangerous one is liable at any time to ensue while the placenta is retained. The placenta may be retained in the uterus from three causes, viz. :—

1. From a want of uterine contractions. 2. From irregular uterine contractions. 3. From scirrhus adhesions.

1. RETENTION OF THE PLACENTA FROM WANT OF UTERINE CONTRACTIONS.—This is very liable to follow a protracted labor which has been attended with unusual sufferings. Gentle frictions on the abdomen, and slight traction on the umbilical cord in the direction of the axis of the pelvis, are calculated to excite the action of the uterus. But if much force be used in traction on the cord, serious consequences may result : first, there will be danger of tearing the cord from the placenta ; second, there will be danger of inverting the uterus ; third, there will be danger of producing prolapsus of the uterus ; fourth, there will be danger of tearing the placenta from the uterus, and thus causing copious and perhaps fatal hæmorrhage. The danger of producing the above consequences is much greater when undue force is used to extract the placenta by the cord than when the hand is prudently introduced into the uterus for that purpose. Ergot given in such cases will usually expel the placenta, and insure the subsequent perfect contractions of the uterus. Gentle traction, however, may be made on the funis, first on the axis of the brim, which is done by drawing with the cord against the perineum, and afterward on the axis of the outlet. In cases where the uterus acts insufficiently, by using just so much force on the cord as will prevent the placenta from retracting during inspiration, and holding on to what is gained during expiration, will be sufficient to extract it in a little time, without danger of any injurious effects ; and this is as much force as ought ever to be used in such cases on the cord.

2. RETENTION OF THE PLACENTA FROM IRREGULAR ACTION OF THE UTERUS.—Bearing in mind what has been said in a former part of the work on the construction of the uterus, we shall perceive that there are both longitudinal and transverse muscular fibres in this organ, either of which may be excited to action while the others are quiescent, and which may contract the uterus into the form of a cylinder, or into the shape of an hour-glass, thus firmly closing upon the placenta and preventing its expulsion.

Sometimes steady but not strong extension upon the cord, long continued without relaxation, will overcome the spasmodic contraction of the uterus. If it does not, the hand must be introduced, and the placenta carefully extracted, in the manner hereafter to be described.

3. RETENTION OF THE PLACENTA FROM MORBID ADHESION.—Morbid adhesions of the placenta may arise from inflammation and the effusion of coagulable lymph connecting the two ; it may also be caused by induration ; or it may arise from calcareous or scirrhus deposition. But from whatever cause it may arise, the adhesion is generally limited. This accident being the result of disease during pregnancy, it has no relation, of course, to the kind of labor. It is much more dangerous than irregular contraction, because the uterine action detaches more or less of the placenta ; but the adhesion, retaining the mass in the uterus, prevents its contraction and the closure of the bleeding orifices of the uterine vessels. The diagnosis is, in almost all cases of morbid adhesion, or of retention from irregular contraction, utterly impossible to arrive at with certainty until the hand is introduced into the uterus ; we may, however, always strongly suspect that retention arises from one or other of the above causes when the after-pains are long continued and strong, and the placenta is not extruded.

TREATMENT.—Since we can not be sure that retention arises from the above causes, the means before recommended must be duly tried; if they fail to expel it, the hand must be introduced in the following manner: make bare the arm, and well warm and oil the hand and arm; let the accoucheur place himself on the bed, on his knees, between the limbs of the patient; then take hold of the cord with the left hand, and put it on the stretch as a guide for the other hand to the placenta; now introduce the thumb, fore and middle fingers, along the cord into the vagina, and let them remain in that position for a few minutes, which will often excite the contractions of the uterus after other means have been tried in vain; at the same time the woman may be directed to place her hand upon her mouth, retain her breath, and bear down, which compresses the abdominal muscles, and exerts a great force upon the uterus; the nurse may also place her hand on the abdomen over the region of the uterus, and press gently down toward the pelvis. These manipulations will very commonly cause the uterus to contract, detach the placenta, and force it into the vagina.

Should the means above recommended fail to be successful, or if there have been strong contractions of the uterus previously without extruding the placenta, or should there be copious hæmorrhage, the hand in a conical shape should be gently insinuated into the vagina along the cord, and, following it, must be carefully entered through the os uteri until it arrives at the insertion of the cord; then search for the margin of the placenta. If there be hour-glass contraction, we must gently dilate the contraction by a conical position of the fingers, until we arrive at the placenta. Having found its margin, insinuate the hand between it and the uterus to ascertain if it be free: should it not be free, and yet there be no morbid adhesion, very slight insinuation of the fingers between it and the uterus will separate it. Then continuing to keep the cord on the stretch, take firm hold of the placenta and retain it fast; the previous working of the fingers will have excited the contractions of the uterus where they had been dormant, or increase them where they had been active; then, keeping hold of the placenta with one hand, and the cord on the stretch with the other, the nurse at the same time making gentle downward pressure over the uterus, and the woman assisting as before by retaining her breath and bearing down—let the uterus expel both the hand and the placenta grasped by it. This course will insure the contractions of the uterus and prevent fatal hæmorrhage, which will be very liable to follow if the placenta be extracted by force, without thus insuring its contraction.

When the retention of the placenta is caused by morbid adhesion, it is recommended by physicians generally to separate it by manual force. But I deem the practice of using great force very injudicious and highly dangerous, and it has often destroyed the patient. For an obvious reason, the uterus is also very commonly diseased: this prevents its contractions, and consequently the mouths of the blood-vessels are left open after this forcible separation, which pour out blood very copiously, and constitutes hæmorrhage of the most dangerous character. If we can separate it by moderate force, the uterus is not so much implicated, and the contractions may perfectly close the vessels; but if, after a moderate attempt to detach the placenta, we fail, it is a much better practice to let it remain in the womb for a day or two, until sloughing take place: it will then be disengaged very slowly, and, either with or without resort to any means, give the uterus an opportunity gradually to contract on the mouths of the vessels as it becomes separated, and thus prevent a fatal hæmorrhage.

I know that some practitioners urge, as an objection to this practice, that leaving such a mass of foreign matter within the uterus may also act very injuriously; but I have never had any evidence of this. I have extracted the placenta after it had been retained a long time—left, too, after the fruitless and violent mal-practice of another physician, who had failed even in his forcible attempts to extract it. The placenta had softened and become detached in consequence; even putrescence had far advanced; and its effluvia was so great after its extraction, that it caused vomiting in a person who was in an adjoining room. yet no injury was sustained by the patient.

When, therefore, the placenta can not be removed without great violence, it may be permitted to remain until it is detached by nature; at the same time the attendant must occasionally examine, and, as soon as it is separated, remove it in the manner described above.

In a recent conversation with one of the most respectable and aged physicians of this city (Dr. Boyd), he told me that he also had frequently left the placenta remaining for about two weeks without any injury; he stated likewise that he had been in the practice of midwifery especially about fifty-five years, and that the result of all his experience could be couched in a few words, viz.: "We must depend more on *nature*, and less on *art*."

The late Dr. Young, professor of midwifery in the university of Edinburgh, states, in his lectures on the management of the placenta, that a woman would suffer less from a portion of adherent placenta being left in the uterus than from its forcible detachment, and that he would rather leave it to nature than employ harsh measures for its removal. He likewise relates a case in which the mass could not be brought away, and yet no fœtid matter nor anything like a placenta had ever made its appearance. There are also several other well-authenticated cases of this kind on medical record. In all these cases, there must have been either absorption of the placenta, or it must have been dissolved and passed off unconsciously with the lochia through the vagina.

It should, however, be forcibly impressed on the mind of the accoucheur that there is at least one grand exception to this rule, viz.: when a copious and dangerous flooding takes place, the placenta must be extracted at all hazards, because immediate death will ensue if the hæmorrhage be not arrested; but there is a chance that the uterus may contract, and the patient recover. A memorable case of mal-practice occurred recently in this city, where, through the want of this precaution, the woman perished from flooding. (See page 154.) It is necessary again to caution the practitioner against all violent measures in extracting the placenta: it must always be done with great care, prudence, and mildness.

A physician in this city a few years ago was tried, convicted, and sent to the penitentiary, for gross and criminal mal-practice in an attempt to remove the placenta. From a combination of inexcusable ignorance of the anatomy of the parts, and the exercise of great violence, *he drew out the womb instead of the placenta*, which almost immediately proved fatal. The following is the report of the case, as it appeared in the public papers at the time:—*

* "TRIAL OF DR. SEPTIMUS HUNTER FOR MANSLAUGHTER, IN CAUSING THE DEATH OF MRS. JUSTINE COZZENS, OF NEW YORK.—The district-attorney opened the case to the jury, stating that this was a novel case, and that only two such were on record as ever having occurred; that it was evidently a case arising from the gross and entire ignorance of the person charged with the professional duties he undertook to perform, and which unhappily caused the death of the female he was called to attend.

"Elizabeth Farrington sworn.—'I live at 328 Madison street, and am married, having no living children. I only knew Justine Cozzens as living in the house; saw her four or five months before her death—was never in her apartment until the evening before her death. She was a married woman and was healthy. She had one child besides the last; she occupied the basement and part of the second floor. She was confined with the second child at ten o'clock at night, about the 6th of April. She complained in the morning, and at ten at night the baby was born. I did not attend upon her during the birth; she was confined in the basement; I was not present, and did not see the child until about one o'clock in the morning, when I was called down by my sister, Eliza Dennis, who resides in the same house. She was not with her during her confinement. I went down at one o'clock, and found the sister of the deceased, Mrs. Newman, my sister, and another lady. I found the woman apparently doing well, and not in much pain, lying on a mattress or a cot; I saw the babe then—it was a healthy little boy. I stayed there about half an hour, when I went with her sister for the doctor, as nothing had followed the birth; and I went merely as a companion for the sister, who became fearful. The child was in one of the female's lap when I went down. I persuaded the sister to have Dr. Nichols, and went with the intention of bringing him. We went down Grand street, and met two watchmen, whom we asked where there was a doctor near: one watchman pointed out the house where Dr. Hunter lived—I think, at the corner of Scammel, East Broadway, and Grand street; I met a watchman at the door, and he knocked until he waked Dr. Hunter up. It appeared to be a large drug-store and he appeared to be in the back room adjoining the drug-store. He came to the door, and we told him what we wanted, and the situation of the woman. He asked if the baby was born, and we told him it was born at ten o'clock. He asked who had taken the baby. The sister said she had taken it. He asked then if she had meddled with anything else. She said not. He asked if we had given her anything to drink. She answered that she had given her some tea. He said we ought to have given her some brandy. She said they had got some brandy, in case it should be needed. At the door we told him the child was born, but nothing had followed, and we came for a doctor. We got back to the house of Mr. Cozzens a few minutes after two o'clock. When we got in, the woman appeared pretty lively, and he gave her some raw brandy. He then commenced, after asking if we had meddled with anything else, and said it was a good job that they had not meddled with anything else. I showed him the child before he commenced his operations. The child was alive and well, and was dressed. I did not hear him ask any questions as to the cord before he began to operate.'

"The witness was then ordered to go on and detail what further occurred, and what the prisoner did, when she was interrupted by the counsel for the accused, who objected to the introduction of further testimony on this point, for the reason that the defendant was indicted as a LABORER and not as a PHYSICIAN, and was not charged with having been guilty of culpable negligence in his professional capacity as a physician, but merely as a laborer, in which latter capacity he could not be guilty of the offence as charged! The court decided that the indictment was sufficient, and denied the motion of defendant's counsel. The witness then proceeded:—

"The accused, after giving the brandy, commenced and was engaged two or three minutes, when he broke the cord. He put his hand under the cover, and I could not see what he did. I saw him band the cord to one of the females, and told her she could throw it away. It was about three quarters of a yard of the cord; he did not say what it was. The deceased during this did not say anything; she did not appear

Another case is recorded in a recent medical work, of a physician near this city, *who drew out the intestines instead of the placenta*, which was, of course, fatal also. Hence we see how important it is that those who take upon themselves the practice of this noble and very responsible branch of medical science should be well instructed and thoroughly understand how to manage the various difficulties and dangers which may occur in connexion with parturition, and particularly that they should learn the very important art, of non-interference in the great majority of obstetric cases. *When to do nothing* is a great lesson

to be in much pain, and laid pretty quiet. After some time, he took something else, and said there was a little left back. This was about twenty minutes after taking the cord. She appeared then to have more pain, but did not complain. I did not see the second substance he took. He then commenced again, and she screamed out very much, and said he was dragging her heart out. He appeared to be pulling then very hard. She screamed out several times, and jerked herself back very much; she was lying on her left side. She told him he was hurting her so much, she could not stand it. The cot was standing against the wall, and she got against the wall. When she told him he hurt her so much, he got up, and said if anything happened, she must charge it to her own misconduct, for she had displaced all he had done, and it would take him twenty minutes to replace it. He then came into the front basement, took his coat, and said he could do nothing unless two or three came in and assisted him. I then went in, and the sister of deceased and another witness went into the back basement. He then placed me at her head to bathe her face with vinegar, and the sister at her side. He then went on his knees, and, taking a cloth in both hands, and placing both his hands under the cover, commenced pulling very hard. Mrs. Cozzens screamed very much; she said it was killing her. Prisoner told her to cough several times; she tried to cough as well as she was able, but grew so weak that she could not cough. The sister of deceased told the defendant that her sister was dying; he said no — she was only faint — and told us he guessed we would all be faint if we had gone through what she had done. He continued pulling until I observed her mouth drawn toward her ear. Three times during that time she ceased to make any complaint. When we found her so quiet we thought she was dead, and we would have another doctor. He continued still pulling, and told her sister to leave the room, as she would make her feel worse, for she was only faint. He told me also to bathe her temples, and was still pulling.

"He said to her, 'You are wonderful, patient, now! — all will be over in a few minutes, and then you can take a nice sleep.' He said, 'I have got it now: here it is!' — and brought something forward in both hands, and said, 'Here it is!' He then desired me to bathe her again. He asked us if we ever saw such a curious thing to form in the human body, and showed it to us. We told him no, we did not. He said he thought it looked like a false conception. He then washed it in three waters, and turned it, for it appeared to be very bloody. There was an old check-apron lying on the cot, and he asked if it was of any use to us. We said it was not, and he folded it up in the apron; he then placed it on the table in the front room. They then all left the back room except me and the doctor. I told him she had no pulse; he said it was because she was faint, and told me to bathe her temples. He then asked her if her gown was too tight for her: no answer. He asked her if she would have a little brandy: but there was no reply. He asked me to give him a little, and I gave him some mixed with sugar and water, and a spoon, to give to deceased. He took some in the spoon and put it to her mouth, but it ran upon the pillow, as her teeth were clenched. He then turned to me and said, 'She is gone, and has been gone some minutes!' — but wished me not to name it in the room. I went out immediately and named it.

"He then asked for his coat and the other that he had taken. I told him that I had got that safe, and should not let it go. He said it was no matter: for what had happened would have happened to any other medical gentleman; and we told him we could not let him go until another medical gentleman was sent for. He said he would bring one — went out, and was gone about an hour. Nearly an hour elapsed after he came there, and the time the last substance was taken from her. When he went out he returned with Dr. Nichols. What passed between them, or what conversation passed between them, I can not say. Dr. Nichols saw the body; I took charge of the substance in the check-apron; it was shown to Dr. Nichols, but by whom I can not say; it was then placed again in the basement-window. Dr. Nichols did not remain many minutes: the doctors both went away. About five o'clock in the morning we sent for the coroner, who came about four o'clock. The body was left lying in the same place until he came. The substance taken from her by the doctor was in the same condition and place that Hunter left it; the body was also in the same condition as when he left it. There was an inquest then held on the body; other physicians, strangers to me, were there; they went into the room where the body was, and we were all ordered out. The substance in the apron was also handed over to them, and they had the body and substance both in the same condition as when Hunter left. The cord was handed to another witness, who put it into the slop-pail, at my instance, and I saw her take it toward the pail. I do not know what became of the second substance that was taken. I showed the doctors the cord in the pail. I think this woman was about twenty-nine years of age — very stout and fleshy. When the sister of deceased and witness went for Hunter, she asked him if he was the doctor, and he said 'Yes.' This was directly after we came to the door. I omitted to say that prisoner asked for a pair of scissors after the second substance came, and he said there was a little more to come, and they were handed to him."

"Cross-examined. — 'Mrs. Cozzens had been often in my room before her last illness. I had never before been in hers. She was in my room the very morning of her confinement, and remained about twenty minutes. She had pains, but got better, and went down again. She was very strong, only when she had pains. I did not see her again until one o'clock next morning, when I found her on a cot in a little dark room in the basement, large enough for a cot, table, cradle, &c. She was dozing when I first went in: her sister spoke to her and she awoke, seemed lively, talked about the baby and the cap it had on. After Dr. Hunter was gone, I found a great deal of blood under the cot on the floor, and much under the bed-clothes on the cot: it appeared to be running down fresh. The former and oldest child of Mrs. Cozzens is still living, and is about seventeen months old.'

"Direct examination resumed. — 'When she jerked herself, his hands were under the cover, and the doctor appeared rather in a rage; I did not see her limbs move: he then took his coat off. She had exclaimed once before that he was tearing her heart out. When he was on his knees, pulling with both his hands, she exclaimed again, and he was pulling very hard, and in a profuse perspiration. I did not see any blood on the floor before he took the last substance away, nor until after the coroner arrived. The other two witnesses held her by the feet, and I by the wrist, to keep her steady, according to the doctor's order. By holding her wrist, I found when her pulse was gone. She tried to disengage her arms and throw them about. She laid quiet some minutes before he brought the last substance from her.'

"Mrs. Caroline Newman sworn. — 'I am sister to the deceased. She was born in Switzerland, and was going on twenty-nine years of age. She was married in this city about three years ago. Her health was good up to the time of her marriage. The child was born at ten o'clock by the watch. I delivered her. There was no difficulty about it. Her labor was short; she did not expect it would be so soon, and had an easy time of it. I separated the cord with scissors, and put the ligature around it. The child was healthy, and the mother in good spirits after the delivery. The placenta did not come in due time. There was no unusual flooding. She had a family doctor, Dr. Wright, but had no time to send for him: it came so quick. After the delivery I waited until about two o'clock, when I went for the doctor. Before that, I

for us to learn, not only in the practice of midwifery, but also in that of medicine generally; and he who has learned this *well*, has made great progress in his profession.

In concluding this section, I may state that in my practice I have never yet failed to remove the placenta by following the rules laid down above. I have not only succeeded in my own cases, but I have frequently been called in consultation with other and excellent physicians where there has been retention of the placenta, and have likewise succeeded: and I am confident that similar success will attend all others who carefully pursue the same course.

examined her from time to time to see if the placenta had come, and then Mrs. Farrington and myself went for Dr. Nichols, but he was not in; and we went to a watchman, and he directed us to Dr. Hunter. The umbilical cord was all right before the doctor came; the part he pulled out was half or three quarters of a yard long. The after-birth, or placenta, was about the usual size. I whispered to him that I feared she would die, and he said he would insure her life. When my sister would not have him any longer, he called us to hold her, and placed me at the knees with the other woman, and Mrs. Farrington, I think, at the head, and we held her to keep her from moving. As the doctor worked, she tried to get clear of us all, and said she would rather die than to be so treated. He was in a great sweat, and on his knees, pulling, and she screaming. When the last substance came away, he asked us if we knew what it was. I said, "No." He said it was a false conception. When she lay still, he said she fainted, but she was dead. She ceased struggling or complaining about five minutes before the last substance was taken from her. The body and the substance taken from her were in the same condition when the doctors came as they were when the prisoner left her.

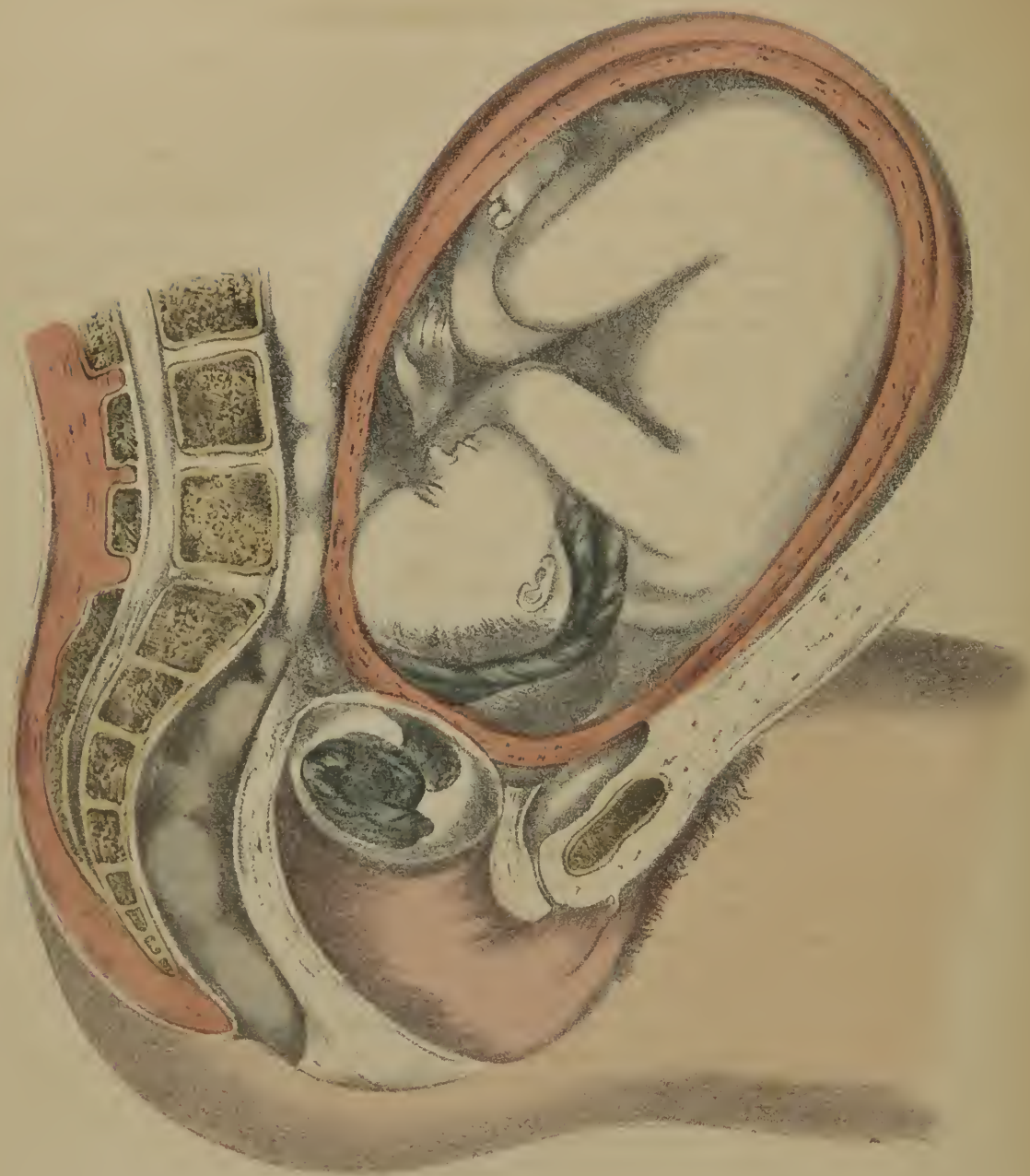
"Dr. John H. Griseom sworn. — 'I am a physician. I examined this woman on Sunday the 7th of April: I was called about eight o'clock, and arrived between eight and nine. Dr. Ellis assisted me, and Drs. Nichols, Lobstien, and Walters, were also present. Before examining the body, we were shown substances in a bowl taken from the body. The first was the human uterus with adjacent parts attached — such as one of the tubes, portions of the broad ligaments by which the uterus is suspended, and an inch of the vagina. The outside was stripped of its lining membrane so as to expose its muscular fibres. There was no violence exhibited on the uterus, except that its adjacent parts were taken from it. The ligaments were very much torn and ragged. We were shown the placenta, which had no umbilical cord attached to it: one end of this cord is fastened to the placenta, and the other end to the child. The length of this cord ranges from eighteen inches to three feet; it is the only connecting link between the mother and the child, and all the sustenance is taken through this cord to the child: it is composed of blood-vessels, &c. After the birth of a child, we usually wish the placenta should be thrown off within the hour. It is absolutely necessary for the patient that it should be discharged. When it is not thrown off, we usually excite contractions of the uterus: first, by pulling the cord gently from side to side, but not to pull so hard as to break it; then by gently pressing upon the uterus. We found the cord in the slop pail; it was about eighteen or twenty inches long; had a portion of the covering of the placenta attached to it, and appeared to have been torn off. We found the body in the little room, brought it into the larger one, and stripped it. Our attention was first attracted by the enormous quantities of blood: a large quantity of coagulated blood was between the thighs, the bed was soaked with it, and a large puddle of it on the floor. The abdomen was sunken. We made incisions, and the first thing that presented itself was a vacant abdomen as far as the uterus was concerned. The intestines were high up, and not in their usual position; two spots of extravasated blood, one on each side of the abdomen; one Fallopian tube remaining, one absent; both ovaries remained in the abdomen. The upper end of the vagina was open, so that the fingers could be passed through it externally. Both broad ligaments that support the uterus were torn, ragged on the edges, and part of them gone. The appearance of the body indicated that the uterus had been taken from it. The treatment was not proper: no one that had ever seen a case before would mistake the uterus for the placenta; none but an exceedingly ignorant man would do it. If anything is supposed to remain, the hand must be inserted, and the part can be easily ascertained. The placenta that I saw was perfect. I think no person of any skill could mistake the uterus for the placenta: the former is a solid substance; the latter a soft, spongy one. It is possible there would be a case in which a man of skill might mistake the uterus for the placenta, when the latter was in a compressed state. It would require a great deal of force to draw out a uterus, situated as they are: a strong man might do it.'

"Cross-examined. — 'If the placenta were left in, it would decay, produce disease of the uterus, &c. Its removal, as to its effects upon the mother, is almost as important as the removal of the child itself. I have practised eight years, and have delivered at least one hundred females, but never had a case where the umbilical cord was pulled out or entirely removed from the placenta.'

"Richard Merrell sworn. — 'First knew Mr. Hunter in Manchester, Kent county, England; have known him thirty years. His father was a surgeon in extensive practice; he was in his father's office studying. I understood he went to London, to practise in the hospital. When he returned from London, he practised as a surgeon, and had his sign up for four or five years. He has attended my wife in her confinement, and given satisfaction, as he has in all his treatment of my family.'

"The jury retired, and, after an absence of two hours, returned into court with a verdict of 'Guilty of manslaughter in the fourth degree.'

"The recorder then addressed the prisoner as follows: 'In this case you have been indicted for manslaughter in the first degree. The jury, however, convicted you only in the fourth degree. For this degree of manslaughter, the punishment varies from two years in the stateprison to one year in the penitentiary and one thousand dollars' fine. It is not now necessary to detail the circumstances on which the jury found you guilty. It is sufficient to say that there was a chain of circumstances, or rather facts, proved in evidence, which, from the testimony given of your character and disposition, must have been as painful to your own feelings as they have been to the community at large. When the jury first came into court, they brought in a verdict of "Guilty of gross ignorance;" and when informed that such a verdict would not be a legal one, they returned a verdict of manslaughter in the fourth degree, accompanied by an earnest recommendation to mercy. It is, however, due to the court to say that, after reading the testimony, which the jury also heard, there can not be conceived a case of grosser ignorance, more fully established, or more fatal in its results; and if the jury had not so strongly recommended you to mercy, the court would have felt themselves bound, by their duty to the community, and in order to protect the poor and ignorant from similar impositions, to sentence you to the highest penalty that the law allows. But the court could not do so without disregarding the recommendation of twelve respectable men, who paid the strictest attention to this trial, and who, notwithstanding that they exhibited strong feelings of pity for you, have also shown that they possessed a strong and honest determination to do their duty. The court has paid all the attention which it deserved to the testimony of those witnesses who spoke in such high terms of your professional character, and the services they received from you. But it appeared that the services you gave them required little or no knowledge, and that nature alone had performed the office of physician. The court has referred to these circumstances, in order that they may not be considered as regardless of the public welfare, in inflicting no higher punishment on you than they are about to do. And, were it not for the recommendation of the jury, the court would certainly be obnoxious to the charge of having disregarded the welfare of their fellow citizens — The court will not inflict any fine upon you, but sentence you to one year's imprisonment in the penitentiary.'



SECTION V.

LABOR COMPLICATED WITH RUPTURE OF THE UTERUS.

THE rupture of the uterus is fortunately of rare occurrence ; but when it does occur, it is generally fatal, although there are some few cases of recovery.

CAUSES.—Rupture of the uterus may arise from the forcible introduction of the hand into the womb in the undilated state of the os tincæ, or by improper violence used in turning the child after the waters have been long discharged and the uterus much contracted, or by the unskilful management of instruments. It is a prevalent opinion among some physicians that a healthy uterus may be lacerated by a forcible or irregular and violent contraction against any hard, unyielding substance, such as the promontory of the sacrum, the linear ilio-pectinea in the pelvis of the mother, &c., when there is an unusual and sharp projection.

That the uterus may be lacerated by its own action, is readily admitted ; but I very much doubt whether this would occur unless the parietes of the uterus were unusually thin, or there was in some part an alteration of its texture. And the supposition of some change of this kind has usually been confirmed in examinations after death. In some instances, the change of texture predisposing to laceration has been so great, that it has occurred in the early part of labor, and where the pains have been of the weakest kind.

SYMPTOMS.—When the labor, to all appearance, is going on well, perhaps in the height of one of the pains, the patient suddenly shrieks, or cries out that something has given way within her, and manifests the most violent agony. From that time, all uterine action is very much diminished or entirely ceases. If an extensive rent be formed at once, the labor-pains will be instantly suspended ; but if it be only slight in the first instance, they will be continued for some little time : yet their character will be more feeble, and each successive contraction will increase the extent of the laceration. As the pains of parturition cease, their place will be supplied by a new one, which is referred to one fixed spot, and which is constant, extremely agonizing, and much more difficult to bear than the throes of labor. On examination per vagina, we shall usually find that the head of the fœtus, which was easily detected by the finger in previous examinations, can now only just be reached, or it may have receded completely out of the range of the finger, so as to elude our search. This is owing to the admission of the child's body more or less into the cavity of the abdomen through the rent ; however, this does not always take place, for sometimes the head has previously become locked in the pelvis and can not recede. The pulse becomes quick, irregular, and so feeble, as to be scarcely perceptible ; the respiration is hurried, labored, and painful ; the countenance anxious and dejected ; the eyes sunken, dull, and inexpressive ; the abdomen swells rapidly, and almost immediately becomes very tender to the touch ; vomiting of a dark-colored matter supervenes, sometimes almost instantaneously, at others occurring at a later period ; there is also generally hiccough ; the extremities become cold and insensible ; a cold sweat appears on the face, forehead, neck, and chest ; and if delivery be not effected, the patient will sink in a very few hours.

Laceration of the uterus is the most formidable accident which can occur during labor, with the exception of rupture of the bladder, which is generally fatal. But there are cases on record in which the woman has recovered from rupture of the uterus, and even borne children afterward. So that we are not to give up the case as hopeless : we are both authorized and encouraged to make some efforts to save the life of the patient.

TREATMENT.—There is but one mode of treatment which offers the least chance of life, and that is, speedy delivery. The instant we know that the accident has occurred, we should proceed to extract the child ; but sometimes the uterus contracts after expelling the child and placenta into the cavity of the abdomen, and closes up the rent, so that it is impossible to effect delivery except by the cesarian section. But if the head be locked in the pelvis, so that either the long or short forceps can be used, the child

must be extracted by them. Generally, however, the fœtus has receded beyond the reach of the forceps : we must then introduce the hand into the uterus, follow the child's body, through the rent made, into the abdomen, search for the feet, draw it by their means back through the same opening into the cavity of the uterus, and extract it per vaginam. Nothing can be more appalling than the sensation communicated by the intestines encircling and coiling around the fingers while the hand is within the centre of the abdomen of a living person ; but however horrifying the idea or the reality may be, all feelings of repugnance must give way before a stern sense of duty.

"As soon as delivery has been accomplished, a large dose of opium or morphine should be given ; the utmost quietude must be observed ; everything stimulating (unless the depressed state of the system requires the administration of a cordial) is to be avoided ; and the restorative powers of nature must be trusted to for the recovery. I know no medicines but those of the soothing kind that are at all likely to be of service ; and no other specific means can be adopted until inflammatory symptoms appear, when the case must be treated as inflammation of the abdomen."

SECTION VI.

LABOR COMPLICATED WITH RUPTURE OF THE BLADDER

THIS is a more certainly-fatal accident than even rupture of the uterus—no case of recovery ever having been recorded under any treatment that has come to our knowledge.

High authorities have suggested and tried opening the abdominal cavity ; sponging out the extravasated urine ; cleansing the peritoneum by ablutions of warm water ; drawing up the bladder, placing a ligature around the lacerated opening, and keeping a catheter in the bladder to draw off the urine as it is collected, to prevent its distension ; and hopes have been entertained that adhesive inflammation would close the aperture : but the treatment has uniformly failed.

This accident is generally, if not always, the effect either of neglect or improper interference. It can seldom or never occur in the hands of careful practitioners. It may be caused by undue distension of the bladder during labor, which will never be allowed by a judicious attendant ; by vesical hernia, which will be rectified by a skilful accoucheur ; from the careless and rash employment of instruments under a distended state of the bladder ; and from turning the child without first evacuating the bladder : these are the most common causes of this fatal accident.

Since rupture of the bladder is so universally fatal, and since it can easily be prevented by keeping its contents evacuated, it becomes at all times one of our especial duties to have a watchful eye over its condition during the whole period of labor ; and where the silver catheter can not be introduced into the bladder in consequence of the pressure of the child's head on its neck, or the pendulous state of the abdomen, a flexible male catheter must be used.

SYMPTOMS.—When laceration of the bladder takes place, the symptoms are very much like those described under *rupture of the uterus* : the same sudden manifestation of violent pain, accompanied with a shriek, and a declaration by the patient that something has burst within her ; rapid sinking of the powers of life ; and general tumefaction and great tenderness of the abdomen. The particular symptoms present in this case and absent in rupture of the uterus are, a continuance of the uterine contractions, and no recession of the child.

TREATMENT.—Since this accident is unavoidably fatal, our principal care should be directed to the preservation of the child, and to endeavor to extract it before its death, either by the forceps or by turning, which must be determined by the stage of the labor in which the accident occurs. In all cases where the powers of life are not sinking rapidly, but the woman's strength remains unimpaired, and the uterine contractions active, there is so long a chance of the child's life being preserved in utero, and of the labor

being completed by its natural action : for when the death of the child does occur, it arises from the exhausted state of the mother's system. The child's life having thus been secured, although our solicitude for the life of the mother is wrought up to the highest pitch, all our efforts to save her will be fruitless and disappointed. Prevention is the remedy.

SECTION VII.

LABOR COMPLICATED WITH PROLAPSUS OF THE CORD.

THE cord may descend in a loop by the side of or before the head, or the breech. The longer the cord is, the more likely is this complication to occur. It gravitates to the os uteri, and collects there in a fold ; and when the membranes break, it is carried down into the vagina by the gush of the escaping waters.

Such a complication does not bring with it any danger to the mother, but parturition goes on just as if it had not happened : for the space occupied by the cord is too inconsiderable to impede the progress of the labor. But the life of the child is generally in extreme peril, in consequence of the pressure to which the cord is subject between the presenting part and the bony walls of the pelvis. The life of the fœtus in utero is sustained by the circulation through the cord : any interruption, therefore, to the free passage of the blood is attended with great hazard ; and if it be suspended for any length of time continuously, death will ensue as surely as if breathing were prevented after birth. It is consequently a matter of great moment that we take every means in our power for its preservation.

TREATMENT.—If, when we are called to a labor, we find the cord external, cold, and flaccid, and the pulsations having entirely ceased, there can be no doubt of the child's death. Any interference in such a case is useless : the labor must be allowed to go on without interruption by any attempts to obviate the difficulty. But if the arteries are still beating, however feebly, means must be immediately taken to prevent the pressure to which they are or will unavoidably be subject in such a situation, before the birth can be perfected.

The following are the methods proposed by different celebrated practitioners, some relying on one and some on another : 1. Pushing the prolapsed cord to that part of one side of the pelvis where there is most room, and where it will be less in the way of injury from pressure. 2. Returning the cord and keeping it above the presenting part until the fœtus is partly in the world. 3. Hastening the delivery by the forceps. 4. Turning the child, and delivering by the feet.

I can not recommend the practitioner to rely on any one of these methods in all cases. Much will depend upon the stage of labor in which the prolapsus is discovered, or the practitioner arrives ; whether it is a mature or premature labor ; the size of the pelvis and head of the child ; the state of the soft parts, &c. Sometimes one and sometimes another of the above methods will be the best : the choice must be left to the judgment of the practitioner. We may remark, however, that in mature births, unless the pelvis be large, but little reliance can be had in placing the cord to one side of the pelvis ; because the head usually occupies the space so nearly, as to fail in preventing compression of the cord. But when the pelvis is large, and the head of a normal size, or in premature labors at six, seven, or eight months, this method will frequently be successful : yet this can only be accomplished where the head has not sunk very low in the pelvis.

With respect to carrying the cord above the presenting part and retaining it there until the labor has advanced, this will occasionally be successful if attempted before the head has passed the brim of the pelvis ; but sometimes as soon as the fingers are removed, prolapsus again takes place. In such cases, the cord may perhaps be retained by the insertion beneath it of a piece of sponge or cloth, and thus carry it above the presentation. But where the head has fairly entered the brim of the pelvis, there is little chance of success by this means.

Hastening the delivery, says Severn, may be successful where the foregoing means fail. Great care, however, must be taken in this case.

Turning the child should never be attempted unless the prolapsus is discovered in the sac before the membranes break. The operation of turning is always attended with some risk to the mother: and the life of the parent, or the integrity of her parts, is not to be put in competition with the life of an unborn child; but where the prolapsus is discovered before the membranes break, turning may be practised with success—taking great care to place the cord so completely out of the way while the hand is in the womb, as that it will not prolapse after the child is turned. Some practitioners introduce the hand into the womb and hook the cord on the legs of the child; and where the head has not entered the brim of the pelvis, and the parts are well dilated, this may be practised at times with success.

SECTION VIII.

LABOR COMPLICATED WITH DESCENT OF THE HAND.

SOMETIMES one or both hands will descend by the side of the head or the breech, and materially obstruct the progress of the labor. This is to be ascribed to the original position of the fœtus in utero. Usually the arms are placed across the chest; but sometimes one, and occasionally both, are placed on the side of the head against each ear. And where this is the case, on the rupture of the membranes, and evacuation of the liquor amnii, they descend more or less by the side of the head.

Although this complication does not imply danger to the life, either of the mother or child, yet it is frequently productive of considerable suffering to both. It increases the sufferings of the mother in consequence of the space which the hand or hands occupy, proportionably retarding the labor, requiring more violent and more numerous pains to propel it through the pelvis, and the hand and arm of the child are generally much swollen and sometimes inflamed in consequence of their position.

TREATMENT.—In such cases, as soon as the membranes rupture (if it has been discovered before), the hand must be seized by the two fingers, carried above the presenting part, and kept there during several pains, or until the presentation has made some advance, and thus prevent the liability to a second prolapse. If we withdraw our fingers immediately after we have passed the hand up, the next pain will probably protrude it; but if, after keeping it there some time, it should be again protruded, a piece of sponge may be used in the same manner as recommended in *prolapsus of the cord*. Should, however, all our judicious attempts to keep it up be baffled, it will arise from largeness of the pelvis, and it may then be suffered to remain; for it will probably be only slightly swollen, and that is better than to irritate the vagina by frequent and useless efforts to retain it above. But when we are not called till the labor has made considerable advance, and the head has sunk low in the pelvis, and the pelvis is not unusually wide (or it may be narrower than usual)—if the fœtus does not advance, and symptoms of sinking or exhaustion appear, the fœtus may be delivered by rendering such aid as may be required in the judgment of the practitioner.

SECTION IX.

LABOR COMPLICATED WITH PLURALITY OF CHILDREN.

ALTHOUGH the human female is usually uniform, yet, like other uniparient animals, she sometimes produces more than one offspring at a birth; and, when more than one, twins are by far the most frequent; but occasionally she will have three or four. In some very rare cases, five children have been

delivered at a birth ; and it is stated in the "London Practice of Midwifery" that Dr. Osborn met with six distinct ova thrown off at one abortion !

Each fœtus is enveloped in its own distinct membrane, so that one body is not in contact with another ; each possesses its own quantity of liquor amnii, has a separate funis, and a separate placenta. The placenta are generally attached to different parts of the uterus ; sometimes their edges unite without any anastomosis of the circulation ; but at other times there is a perfect anastomosis between them. In some very rare cases there has been but one placenta and but one cord, which afterward divides off and passes to each ; and, in yet more rare instances, both children have been enclosed in one bag of membranes.

SYMPTOMS.—Various indications have been relied on to diagnose the presence of twins in the womb during the later periods of gestation, almost all of which are liable to great fallacy—such as the uterus being of a larger size than usual (but this may depend on an increased quantity of liquor amnii as well as on twin pregnancy) ; the woman feeling two distinct movements at different parts of the uterus (but the sensations of a pregnant patient on this point are scarcely ever to be relied upon, as experience abundantly proves) ; and an irregularity in the shape of the womb, its being broader than common, and measuring more laterally than in its longitudinal direction (but this may be the consequence of a transverse position of the fœtus, or some irregular development of the uterine fibres).

The detection of the sound of two distinct fœtal hearts by auscultation is the only reliable means of diagnosis before labor : yet this requires great practice and considerable tact to determine ; but happily it is of little consequence whether it be detected before labor or not, as the knowledge would not at all change our practice, for it would not be in the least influenced by our discovery.

TREATMENT.—As soon as a child is born, we should always lay our hand on the abdomen of the mother to ascertain whether there be a second child ; if so, the womb will be found still large, its fundus rising to or above the umbilicus, and occupying a space apparently almost as great as before the first was born. We shall also detect similar elasticity and subdued fluctuation, which is so characteristic of the later term of pregnancy. As soon as we have detected the presence of a second child, we must ascertain its presentation ; and if the head or breech present, rupture the membranes, and the depending part will fall immediately into the pelvis. If it lies transversely, turn it. There is no necessity for preserving the membranes of the second child entire, because the parts are all well dilated, and the rupture of the membranes excites the uterus to increased action, thus facilitating the termination of the case. It will occasionally happen that both children are expelled so rapidly, as scarcely to give time to separate one before the second is born.

If the uterine contractions are of an average power, the birth of the second child is seldom protracted, unless it is either misplaced in utero, monstrous in formation, or much larger in size than the one first expelled. Women seldom suffer much during the birth of the second twin ; because the principal pains of labor are those caused by dilatation, and the sufferings are in proportion to the resistance experienced : the os uteri and the soft parts being well dilated by the passage of the first, the second passes without any great effort or much painful sensation.

Generally it is best not to tell the woman that there is a second child, it depresses her spirits so much ; because she naturally expects that she will have to pass through the same sufferings again. No attempt should ever be made to remove the placenta of the first child until after the second is born, or flooding will almost certainly supervene. After the birth of the second child, we must examine again, to ascertain as before whether there be a third ; so likewise with regard to a fourth, fifth, sixth, &c., as any practitioner may possibly meet with such a case. Cases are on record where one fœtus and placenta have been expelled prematurely, and the other retained and carried to the full period of gestation, without dangerous loss of blood. In some rare instances, the membranes of both children rupture before the first is born ; and sometimes they will both present together—perhaps the head of one and the feet of the other, or one foot of each. In such cases, one must be returned as much as possible, or retained in its position, while the other is suffered to advance. I need scarcely to say that if flooding, convulsions, deformity of pelvis &c., occur, the case must be treated as laid down under these respective heads.

CHAPTER IX.

INSTRUMENTAL LABOR.

SECTION I.

THE GENERAL USE OF INSTRUMENTS.

NO INSTRUMENT will be found so *powerful as the unassisted efforts of nature.*

Never use instruments, or even art of any description, except in aid of nature, when she is decidedly and absolutely incompetent to the completion of labor.

I think it incumbent on me, while treating of this part of midwifery, to bear a most pointed and faithful testimony against the very general use of instruments in labor. For instruments have been used in midwifery by men-midwives, both in this country and in Europe, to a most fearful and a most fatal extent; and the injury from their use has been so glaring, that even some of the "old-school" physicians have been appalled by it, and have condemned the practice in the severest terms. One of the most learned and experienced accoucheurs in England has the following remarks on the abuse of instruments: "The people," says he, "cage up wild beasts; but a being worse than these—the accoucheur, meddlesome and violent, yet responsible to no one—has been injuriously let loose upon society, with all his instruments of destruction about him."

Can we wonder that so much mischief is done by physicians in this department of medicine, when we reflect upon the very scanty opportunities afforded to our students to obtain a practical knowledge of midwifery in our schools and colleges? Here the student is required to attend two sessions, during which he is obliged to listen to five or six lectures a day on the various branches of study (as anatomy, chymistry, &c.); which is vastly more than any one can digest: and if they could even digest it all, their minds would only be filled with theory, which, however correct, would never make them competent practitioners in midwifery or any other branch of medicine. Instruments are exhibited to them, the manner of using them explained, and their wonderful powers descanted upon, until they thirst for an opportunity to display their dexterity.

A student thus educated, without ever having been present at a single case of midwifery, receives his diploma, goes out into the world, obtains a location, and commences practice. Perhaps among his first cases he is called to a woman in labor. What, I ask, are his qualifications to conduct it with safety and discretion? He is a mere tyro, and has now for the first time entered the only school where the science of obstetrics can be correctly learned. If it happen to be a regular natural labor, he will, in all probability, by his officiousness, soon convert it into a difficult and perhaps dangerous one (for none are so officious as those who are ignorant). Should it chance to be a difficult or preternatural labor originally, if the mother, or child, or both, do not fall a prey to his ignorance or mal-practice, she will have a most fortunate and unusual escape: for the fatal cases in such hands which might be recorded would fill many volumes. Such a one will have to practise many years before he *begins to understand* the duties of his profession. Now I ask would not that woman be far better off in the hands of a female who had been taught at the bedside by a midwife, who had herself been well instructed in the art by some one

male or female competent to teach her, than under the management of such an ignorant practitioner? Yet such is the custom of society, and such the cupidity of females upon this subject, that they prefer *such men to such women*; and when an experienced midwife is recommended to them, they spurn and are indignant at the thought of employing them!

Is there no remedy for these evils and crying abuses? Will not the female sex (if not the male), whose welfare and happiness are so vitally concerned in this matter, be aroused, and led to the only proper means to rescue their sex from this degrading and heart-sickening state, viz., *the practical education of suitable females*, to qualify them for the discharge of these duties? But whether male or female, none should be permitted to take charge of the life of the mother and child on such occasions but such as have been well instructed, both in theory and practice, in the lying-in chamber. This is the only way to make good and competent practitioners, and to elevate the standard of this important branch of medical practice; for nowhere is reform more imperiously required than in the practice of midwifery. That many most valuable lives would thus be saved there can be no question. It is enough to make the blood run cold to hear of the many cases of flagrant mal-practice continually occurring.

In illustration of the gross ignorance and incapacity of young men when they enter on the active duties of their profession, I will here give an anecdote which one of our most noted *professors of midwifery* (Dr. Bedford) is in the habit of relating to his class, *of his own first attempt in the lying-in chamber*. He states that, having received his diploma, and obtained a location, he was one night called up by a gentleman to attend his wife in labor. He proceeded to the place, and after remaining some time, and the pains and suffering of the woman greatly increasing, her cries and distress threw him into such violent agitation and alarm, that he determined if possible to find some way of escape. At length he went down stairs under some trivial pretence, and, as soon as he got into the street, he ran home with all his might, and jumped into bed! He had not been there more than an hour before the husband came in search, and rang the bell repeatedly with great violence; but the doctor, agitated and alarmed, *covered himself up with the bed-clothes, and preserved a trembling silence*. At length the man retired, perhaps to seek another equally ignorant practitioner, but possessing more nerve and feeling. The doctor says he soon after left the city and went to Paris: he also states that he never heard whether the woman lived or died! Perhaps he has there since learned to support the perineum and use instruments!

I have introduced this chapter on instrumental midwifery, as much to protest against their indiscriminate use, and to show the qualification or rather the want of qualification of great numbers of those who use them, as to point out the manner in which they should be used in those very few cases in which they may be needed.

Professor Gilman, of this city, is in the habit of stating to his class when on this subject, that he *takes no pleasure whatever in lecturing upon the use of instruments, because of the great injury and fatal consequences which so frequently result from them*. Instruments, he says, may sometimes be used with advantage by men who well understand what they are doing; but with respect to all others he declares that they have *many chances to do harm, but only one to do good*: and lays it down as a rule never to be lost sight of, that unless the life of the mother or child can not be saved without the use of instruments, they should not be put in requisition.

A very respectable elderly physician, formerly of this city, informed me that while attending Professor Hamilton's lectures on midwifery in Edinburgh, when on the subject of instruments he would exhibit the forceps, and remark that he introduced them to his class that they might see them, but added that he had never once used them in all his practice.

It is related of the great Dr. Hunter, of London, that when lecturing on instruments, he invariably sent for his man John (who attended him as a kind of confidant as well as a servant) to seek for his forceps and bring them in to him. The servant's long absence in looking for them generally gave the doctor a good opportunity to enlarge and animadvert upon their use, which he never failed to do, to the edification and satisfaction of his pupils. After a long and unsuccessful attempt, the servant would return to the lecture-room to announce his fruitless search: the doctor would urge him to make a second attempt,

and which perhaps would not occupy less time than the first, when, in some obscure place, he would find them (for the doctor never used them excepting on these occasions). On the servant's return, they would be exhibited, nearly destroyed by rust; when the doctor would exclaim—" *There, gentlemen, you are my witnesses, by the state of my forceps, how seldom I have used them.*" Then follows this precious confession: "I assure you, gentlemen, that in the course of my long and extensive practice, *I never used them but once in my life*; and, if you will *forgive me that once*, I will promise you *never to use them again.*"

On instrumental interference, Dr. Blundell, a celebrated European accoucheur, holds the following language in his published lectures: "*Floodings, tremendous lacerations, and inversions of the uterus, are the common effects of obstetrical violence—furious and atrocious obstetrical violence—that insatiable and gory Moloch, before whose bloody shrine so many have been sacrificed, to be succeeded in future years by still more numerous victims!*"

And again he remarks: "Do not needlessly thrust the hand into the uterus: *he that hath ears to hear, let him hear it!* Do not needlessly thrust the hand into the vagina: *he that hath ears to hear, let him hear it!* Do not needlessly pass the hand into the genital fissure: *he that hath ears to hear, let him hear it!*" And after exhibiting to his class a number of morbid specimens of the genital organs of women who had died in consequence of injuries received from instruments during labor, he concludes by exclaiming—"After examining the morbid preparations before you, tell me, is it too much to assert that *a thrust with the hand is more dreadful than a thrust of the bayonet? Could the field of Waterloo itself exhibit injuries more dreadful than these?—Observe for yourselves! think for yourselves! act for yourselves!*"

I am confident that in most of the cases in which instruments have been used, had the attendant recognised the salutary resources of nature, and known how to wait for or how to stimulate her powers, the labor would have terminated better without than by their use.

I have never had occasion to use them during all my practice, from its earliest period to the present time; and I have never lost but two cases in my life: one was caused by puerperal convulsions; the other was a case of a young woman who was pregnant of an illegitimate child, and who had made many attempts during gestation to procure abortion. The labor progressed slowly, but she was delivered by the natural powers, after a somewhat protracted labor; shortly after, however, she died suddenly, the cause of which I could never divine.

I have been present in three cases where the forceps were used, and an attempt was made to use them on a fourth person in a labor in which I was concerned; and in every case I am well assured that the labor would have terminated favorably without any interference whatever, had each been left to the unaided powers of nature. In one of these instances, the use of the forceps brought on one of the worst cases of prolapsus uteri I ever saw. In another of the above cases the woman was healthy, had head presentation, a normal pelvis, and the pains were uniform; yet, during my absence, the attending physician made an ineffectual attempt to apply the forceps: afterward he opened the cranium with the trephine, and then took an ordinary boot-hook and introduced it within the skull, and thus extracted the child.

A physician, who attended my own sister in labor, urged the absolute necessity of using instruments in her delivery, to which she resolutely refused to submit; and, after some length of time, the child was safely born, without any accident or injury to either mother or child.

That the first principles of operative midwifery are not settled, even among the greatest advocates for instrumental interference, every one may satisfy himself by reference to the following table of the practice of the various lying-in hospitals in Europe, as officially published by the principal physician attached to each. By reference to it, the student will perceive that while one practitioner uses instruments once in every seven cases of labor, another more prudent, has used them only once in *seven hundred and twenty-eight* cases: all which demonstrates that they have no fixed rules for their application, but that each is governed by his own whim and caprice, or his desire for operations:—

Hospitals and Accoucheurs.	Number of Labors.	Forceps Cases.	Proportion.	Craniotomy Cases.	Proportion.
DUBLIN, <i>Clarke</i>	10,199	14	1 in 728	49	1 in 248
“ <i>Collins</i>	16,654	27	1 in 617	118	1 in 141
PARIS, <i>Baudelocque</i>	17,388	31	1 in 561	6	1 in 2,898
“ <i>La Chapelle</i>	22,243	76	1 in 293	12	1 in 1,854
“ <i>Boivin</i>	20,517	96	1 in 214	16	1 in 1,282
VIENNA, <i>Boër</i>	9,589	35	1 in 274	13	1 in 737
HEIDELBERG, <i>Naegele</i>	1,711	55	1 in 31	1	1 in 1,711
BERLIN, <i>Kluge</i>	1,111	68	1 in 16	6	1 in 185
DRESDEN, <i>Carus</i>	2,549	184	1 in 14	9	1 in 283
BERLIN, <i>Siebold</i>	2,093	300	1 in 7	1	1 in 2,093

The question then arises, “Should instruments ever be used?” To which I reply—I would not say that there was no case in which they were admissible; but this I would state, that the cases in which it is ever justifiable to use them are exceedingly rare; and that instrumental delivery should never be attempted until all the means recommended to alleviate the sufferings and expedite the birth under difficult, preternatural, and complex labors, have been tried in vain. And if so, I believe that, with most practitioners, instruments will become as rusty as did those of Dr. Hunter, of London.

And it is with no small pleasure that I perceive these principles (which I have so long and so ardently advocated) beginning to be acknowledged by some of the most illustrious teachers of midwifery, both in Europe and America, although they cautiously avoid admitting the source whence they have derived the very doctrines which they inculcate: yet it is well known by all reformed practitioners throughout the length and breadth of the land, that I had denounced the common use of instruments, and insisted upon the sufficiency of the powers of nature to effect delivery in most if not in all the cases where instruments were employed by the “old-school” physicians—*long before these men became teachers of medicine, and before some of them became even medical students.* But I rejoice exceedingly in the progress of truth and the onward march of correct principles of medical practice, whether men acknowledge the source from which they have derived them or not.

That more correct views respecting the use and abuse of instruments are finding their way into the colleges of Europe, you will see by the following extract from the recently-published lectures of Dr. Murphy, professor of midwifery in the university college, London. When speaking of the contradictory rules laid down by different accoucheurs on the use of instruments, he says—

“I shall not, gentlemen, so far trespass on your patience as to ask you to unravel with me this tangled web of contradictory experience. It is sufficient if I convince you of the difficulty of this subject, and if it induce you to give patient attention to the only mode that I can adopt to draw a legitimate conclusion: that is, to derive it as nearly as possible from facts, without reference to opinions. I think this may be done. Bearing in mind that the great and leading principle to be observed in these difficult cases is, to preserve both mother and child, if possible, from injury, I think it is in our power to compare the results of cases where the forceps has been applied with those where it has been withheld, and thus determine the practice which presents the greatest success. We shall first direct your attention to the following tables of operative midwifery, given by British, French, and German practitioners; you will find in them the total number of cases given by each, the number of forceps operations, and the results to mother and child, when they are given.

“You will perceive that in these tables the number of forceps operations in British practice is 138; in thirty-five of which the child was still-born, being in the proportion of one in every fourth case. In order to prevent error in this proportion, we have separated Dr. Lee’s forceps cases; the total number of which given by him is fifty-five; the mortality of children, thirty-eight; which would be quite out of proportion (being more than one half) if these cases were not carefully examined. I have endeavored to do so, and to make the necessary corrections. In nineteen of these fifty-five cases, the forceps failed: they therefore became cases for perforation; of the remaining thirty-six cases, one half the children, eighteen, were lost, but twelve of these eighteen were destroyed by other causes than the forceps. Deducting, therefore, all such cases from the whole number, the remainder will be twenty-four forceps

cases, in which eighteen children were saved and six lost, being in the same proportion—that is, one in four.

“In the French reports, forty-one children were lost in 173 forceps operations: being one in four, nearly.

“In the German reports of Riecke and Klugè, which state the mortality of the children, the number of their forceps operations united is 2,808: the deaths of children, 650: being also one in four, nearly:—

COMPARATIVE VIEW OF FORCEPS OPERATIONS AND PERFORATIONS.

BRITISH REPORTS.

Date.	Place.	Name.	Total cases.	Forceps.	Deaths.		Perforations.	Deaths: Mothers.	Total operations.
					Children.	Mothers.			
1781.....	London.....	Dr. R. Bland.....	1,897	4	—	—	8	—	12
—.....	“.....	Dr. Merriman.....	2,947	21	6	—	9	—	30
1828 to 1843....	“.....	Dr. F. Ramsbotham	35,745	49	11	3	38	6	87
1787 to 1793....	Dublin.....	Dr. J. Clarke.....	10,387	14	—	2	49	16	63
1826 to 1833....	“.....	Dr. Collins.....	16,414	24	8	4	79	15	103
1835 to 1837....	“.....	Dr. Beatty.....	1,182	9	4	—	3	—	12
1835 to 1840....	“.....	Dr. Churchill.....	1,640	3	1	—	12	1	15
1832 to 1835....	“.....	Dr. Murphy.....	5,699	14	5	1	29	6	43
			75,911	138	35	10	227	44	365
	London.....	Dr. R. Lee.....	—	55	38	9	127	23	182

FRENCH REPORTS.

1797 to 1811....	Paris.....	Boivin.....	20,357	96	23	—	16	—	112
1812 to 1820....	“.....	La Chapelle.....	22,243	77	18	—	12	—	89
			42,600	173	41	—	28	—	201

GERMAN REPORTS.

1821 to 1825....	Württemberg....	Riecke.....	221,923	2,740	636	127	98	35	2,838
1801 to 1821....	Vienna.....	Boër.....	26,965	100	—	—	43	—	143
1797 to 1827....	Ghent.....	Jansen.....	13,365	341	—	—	5	—	346
1811 to 1827....	Prague.....	Moschner.....	12,329	120	—	—	4	1	124
1825 to 1827....	Bonn.....	Kilian.....	9,392	120	—	—	4	—	124
1814 to 1827....	Dresden.....	Carus.....	2,549	184	—	—	9	—	193
1817 to 1828....	Berlin.....	E. Siebold.....	2,093	300	—	—	1	—	301
1823 to 1827....	“.....	Klugè.....	1,111	68	14	—	8	3	76
	Heidelberg.....	Naegle.....	1,711	55	—	—	5	—	60
			291,438	4,028	650	127	177	39	4,205

“Thus, then, we may conclude that one fourth of the children delivered by the forceps are lost. What is the result when these protracted cases are left to themselves? Is the mortality increased? I do not think such will be found to be the case. In order to determine this question, I must refer you to Dr. Collins’s valuable report—the only report which, from its extreme accuracy and minuteness, affords the elements upon which to form a calculation. Dr. Collins has given tables to show the duration of labor in all the cases he reports; he has also given separate tables to show the duration of labor in forceps cases, and in those which were preternatural. We may also assume that, perforation being only had recourse to ‘when,’ as Dr. Collins observes, ‘after the most patient trial, the impracticability of labor being terminated in safety by any other means was clearly proved,’ all these cases exceeded twenty-four hours. From these data, then, we shall endeavor to draw a fair conclusion:—

CASES OF LABOR PROTRACTED TO TWENTY-FOUR HOURS AND UPWARD, FROM DR. COLLINS’S REPORT.

TOTAL CASES, 430.		STILL-BORN CHILDREN, 150.		MOTHERS DEAD, 40.	
Delivered by forceps.....	12	Still-born.....	4	Mothers dead.....	0
“ by perforating.....	79	“.....	79	“.....	15
“ preternaturally.....	15	“.....	6	“.....	0
“ naturally.....	324	“.....	61	“.....	25
	430		150		40

"From this table you perceive that of 430 cases in which labor lasted twenty-four hours or exceeded it, 324 of them were natural cases, delivered without assistance; and that of these 324, the children were lost in sixty-one instances, which would be about one in five cases. The result of my own inquiries on this subject is nearly similar, and has been obtained from the same source, the Dublin lying-in hospital:—

REPORT OF TWO HUNDRED AND EIGHTEEN CASES OF LABOR PROTRACTED TO OR BEYOND TWENTY-FOUR HOURS.

Delivered.	Cases.	Boys.			Girls.			Mothers dead.	Causes of Mother's Death.
		Living.	Dead.	Putrid.	Living.	Dead.	Putrid.		
By forceps.....	14	4	1	—	5	4	—	4	{ 1 puerperal fever. 1 rupture of uterus.
By perforations.....	29	—	20	1	—	7	1	6	{ 1 puerperal fever. 1 rupture of uterus.
Naturally.....	175	76	19	5	52	22	1	8	3 puerperal fever.
	218	80	40	6	57	33	2	18	

"In 5,699 cases, 218 were protracted to this degree; and of these, 175 were delivered naturally, and forty-one children not putrid were still-born, being one in four, nearly. Thus, then, you perceive that, taking the widest, and, we would say, the fairest view of this question, the proportion of still-born children in these difficult and protracted cases is nearly the same, whether the forceps be employed or otherwise; that the difference, if any exist, is in favor of Dr. Collins's practice of leaving these cases to nature. But this is only one view of the question.

"It may be said, and has been said, in the energetic language of Dr. Burns, that the mother must be considered: 'From the strength of the recommendations of the partisans of nature, we should suppose that whenever the child could actually be born without aid, no hazard occurred; and, on the other hand, that instruments must of necessity prove not only very painful in their application, but dangerous in their effects. Now, the first supposition is notoriously wrong, for *innumerable instances* are met with, where the mother does bear her child without artificial aid, and much, doubtless, to the temporary exultation of the practitioner; but, nevertheless, death takes place, or, at the best, a tedious recovery is the consequence.'*

"Is such the case? It is totally opposed to my personal experience: on the contrary, I have been surprised at *the rapid* recovery of patients who have suffered this protraction, when I had erroneously anticipated, from that very circumstance, all the unpleasant consequences here detailed. But I would again ask you to put aside, for the present, individual experience, and examine the facts. In doing so, our data are more limited than those which assisted us in the former question: because, in the French reports, there is a most ominous silence regarding the mortality of the mothers—they say nothing about it. In the German reports, we are limited to that of Dr. Riecke, who gives 127 deaths in 2,740 cases: being one in twenty-one, nearly.

"But take Dr. Churchill's more extensive researches on this question, from whose valuable work on operative midwifery these tables of French and German practice are partly formed. He states that, 'among the French and Germans, in 479 cases, thirty-five mothers were lost, or about one in thirteen.'† Dr. Churchill gives the proportionate mortality in British practice as one in twenty-one; but you perceive that, in the comparative view we have placed before you, there were ten deaths in 138 cases, which is about one in thirteen. Compare this with the result where the cases have been left to the natural efforts. In Dr. Collins's report, there were twenty-five deaths in 324 cases, or one in thirteen—precisely the same as where the forceps had been used. Among those cases which I have observed, there were eight deaths in 175 cases, or one in twenty-two—a proportion in which I can place the more confidence, because it is derived from personal observation.

* Burns, p. 434.

† Churchill's "Operative Midwifery," p. 134.

"With regard, then, to the second question—the mortality of the mother—take the estimate in any way you please, and you must arrive at the same conclusion, viz., that *the mortality is certainly not increased when these cases are not interfered with*, and all the dreaded consequences which Dr. Burns anticipates from such practice have no foundation in fact. But we might even go further: we might say that, so far from such evils following our Fabian practice, the evidence seems to point the other way, and to prove that the actual mortality is diminished. The twenty-five deaths reported by Dr. Collins include cases of puerperal fever, and other causes of death which might be called accidental, because he gives, under a distinct head, the number of deaths, the 'effects of tedious and difficult labors.'* These are just eleven cases, or one in thirty cases, nearly. The eight deaths which took place under my own observation, include three deaths from puerperal fever, leaving only five deaths from the severity and protraction of labor, which would be in the proportion of one to thirty-seven cases. Caution, however, is necessary, when we would derive a just conclusion from statistics. It is therefore possible that if the reports of these forceps operations were more fully given, so as to separate the deaths from accidental causes from those resulting from the operation, the proportion of mortality would be diminished in the same ratio.†

"We do not wish you to assume more than what we think has been proved, viz., that the mortality of the mothers is not increased by leaving these cases to nature. The safety of the mother or child can not, therefore, be advanced as a reason for instrumental delivery, *when the head is making a very slow but a certain progress*.

"One argument, however, has been much used by the advocates for interference, which is very clearly expressed by Dr. Burns: 'Granting,' he observes, 'the recovery to be excellent, is it no consideration that the patient has been subject to twelve, perhaps twenty-four, hours of suffering of body and anxiety of mind, which might have been spared?'‡ You must perceive that if this argument be worth anything, it will admit of a much more extended application than Dr. Burns would give to it. It might be employed to justify the use of the forceps in every case where the head was within reach, and the labor at all severe. Because, why should your patient be exposed to *any* bodily suffering or anxiety of mind, if it were in your power to relieve her from her miseries? On this principle, the forceps might be used (as indeed they have been used) in every tenth case, and the practitioner relieved from the most anxious portion of his duties.

"But the design of nature will not thus be thwarted; and we might reply to such an argument in the language of Naegele: 'If we admit that proportionate difficulties, according to the constitution of each individual, and an effort of strength (requisite in child-birth), are inseparable from the nature of this process, we must conclude *that an abbreviation of this process, though performed by an able hand*, before the salutary change, on which the preservation of health depends, has taken place in the organization of the mother, that a premature and sudden removal of these difficulties can not be a matter of indifference; that such a violent interference with the functions of nature must incur the risk of destroying the health, though this should not ensue for some time after.'|| A more immediate injury, however, sometimes follows the application of the forceps in the case we are supposing, as well as in cases of impaction. The pressure of the instrument may cause slough of the neck of the bladder or the urethra, and thus establish a fistulous opening into the vagina; and the incontinence of urine that follows renders the patient's life miserable afterward. It is difficult, in all instances, to trace this accident to the use of the forceps. When a forceps operation is described to us, we are seldom told that any mischief is the consequence. The splendor of success is very dazzling, and while we admire the operation, we are too often left in the dark as to the effects.

"Nevertheless, I have been able to trace this accident clearly to the use of the forceps in several instances. The usual account given by the patient is, that 'she had been delivered by instruments, and

* Collins, p. 365.

† It is probable that the reports include deaths from puerperal fever, and those following delivery of the *impacted* head by the forceps.

‡ Burns, p. 434.

|| Naegele's "Mechanism of Parturition," by Rigby, p. 88.

the child's life saved.' Dr. R. Lee, in his 'Clinical Reports,' gives a candid and clear statement of the results in the forceps cases he details: 'Four died from the rash and inconsiderate use of the forceps; seven had the perineum more or less injured; one had the recto-vaginal septum torn; five were left with cicatrices of the vagina, after sloughing; and one with incurable vesico-vaginal fistula.'* Dr. Collins records only *one case* of vesico-vaginal fistula in the whole of his report of 16,654 cases—that was a case of perforation: consequently this accident never was found among those cases which were delivered naturally. The only case of fistula which occurred in the 5,699 cases to which I have so often referred, was one in which I employed the forceps to deliver a child that presented the forehead. The principal cause of difficulty in Dr. Collins's cases was, the large head of the male child forcing its way through a very osseous pelvis; the pressure on the soft parts must be very great, and if fistula could be produced by great protraction of labor in cases that ultimately were delivered without assistance, it must have been an accident of frequent occurrence in these cases, when the soft parts were so much compressed; but such did not happen, and therefore they afford a very favorable contrast to the cases delivered by the forceps in nearly similar circumstances. The intelligent practitioner would therefore hesitate to expose his patient to the risk of vesico-vaginal fistula, for the mere gratification of shortening the severities of labor.

"We have been reluctantly compelled to dwell longer upon the management of this degree of disproportion than we desired. The difficulty of the question it involves, and the contradictions among the most experienced writers, must be our apology. In the case that we are considering—that in which the second stage of labor is protracted, and the head of the child advancing *very slowly*—we have shown you that there is no increased danger to the mother or child by *leaving the case to nature* in place of delivering by the forceps; that if there be any difference in the ratios of mortality, it is in favor of non-interference, and rather against the forceps.

"We have pointed out, as far as imperfectly-detailed facts would enable us, that the post-partum accidents of labor follow operations with the forceps more frequently than cases which are left to themselves: and, consequently, the conclusion at which we must arrive *is hostile to the use of that instrument*, under the circumstances stated.

"But recollect that there is no general rule without an exception, and you will sometimes meet with cases so feeble in their habits that they will not endure a protracted labor without great risk of exhaustion; you may be called to patients where you dare not temporize—whom you must deliver, although the head is making a tardy progress. We only ask you to consider these as the exceptions, not often met with, but still necessary to be studied and understood. It is for this reason we have brought before your notice the symptoms of exhaustion, and those which precede it. The same desire to direct your attention to the study of individual cases which may be exceptions to the general principle, we would wish to govern you, leads me to bring before you the varieties, not only in the formation, but in the resistance of the pelvis, so that you may know where an operation might be undertaken, and where it can not be attempted."

Since, then, there is a possibility that we may be compelled to use instruments in order to save life, after every other means have failed, I shall subjoin plain and concise instructions for their application, when absolutely necessary.

* "Clinical Midwifery," p. 32.

IMPROVED SYSTEM OF MIDWIFERY.

SECTION II.

THE MANNER OF USING THE SHORT FORCEPS.

WHEN, from an attentive consideration of all the circumstances of the case, we have decided on the necessity of having recourse to instrumental assistance, and that the short forceps is best adapted to afford it, the bladder should be evacuated, and the rectum emptied of its contents by an enema. The lower blade of the forceps, having previously been warmed by holding it in water at a proper degree of temperature, should be slowly and cautiously insinuated, in a curved line, between the fingers of the accoucheur, previously introduced, and the head of the child, over its ear; when the first blade has been applied, so as to receive in its fenestra the protuberance of that parietal bone which is situated toward the left side, it must be retained in its position: and the two fingers of the accoucheur are to be placed on the opposite side of the head, or to the right, and over the ear of the child; then the second blade is to be passed slowly between the fingers and the opposite parietal bone; taking care that the direction of the blades is such, as to make them properly and exactly antagonize, and lock into each other: if this be not readily accomplished, the second blade may be withdrawn a little, and slowly introduced again in a more favorable direction. In accomplishing this, extreme caution is required, to avoid the entanglement of any of the maternal parts, which would produce severe, cutting pain. Having locked the blades together, it is usually recommended to tie them; if this be done, the ligature should be slack, to avoid unnecessary pressure on the foetal head.

After having secured the forceps, we should recollect that they are required *to assist* in the expulsion of the foetus, and to aid, rather than supersede, the expulsive contractions of the uterus. It is therefore proper, in ordinary cases, to wait till these efforts come on; and, during a pain, exerting only a very moderate degree of extractile force, to move the handles of the instrument slowly and cautiously from side to side with one hand, while the other is employed at the same time in supporting the perineum, and preventing the danger of its laceration, especially when the head is passing through the outlet. The caution suggested in tying the blades is equally necessary to be observed while extracting with the handles of the forceps: pressure on the foetal head is unnecessary, attended with danger, and must be avoided. Sudden extraction is always highly improper; and perseverance in co-operating with the expulsive powers will generally accomplish the object, without injury to either mother or child, while both may be sacrificed by operating in a violent and hasty manner.

As the head descends and approaches the outlet, a change in the direction of the handles of the forceps is necessary, which should be raised gradually toward the abdomen of the mother, to bring the occiput forward and upward, in order that its passage may take place in the curved line of the pelvis.

Another difficulty which may require the employment of the forceps is, when the face is turned forward, under the pubes, and the occiput is consequently situated in the hollow of the sacrum. This is always productive of a tedious labor, when the pelvis and foetal head are of the standard size; but when the latter is unusually small, if the labor occur before the full term of gestation is complete, or the pelvis be larger than ordinary, the child may sometimes be expelled without much difficulty. When discovered early, before the head has descended into the pelvis, the position may sometimes be rectified with the lever; but when it has descended into the cavity of the pelvis, and the case is lingering and attended with danger, by applying the blades of the forceps over the sides of the head as in a natural situation and presentation, and extracting in the same lateral direction, co-operating with the pains, we may facilitate delivery: if this be done while the head is in the cavity of the pelvis, and prior to its arrival at the arch of the pubis, the face, when obliquely situated, may sometimes be turned toward the hollow of the sacrum, and the situation thus rendered natural.

If, however, the symptoms do not lead us to use the forceps until the head has arrived at the outlet, this change can not be accomplished, and should not be attempted. The utmost caution is required to prevent laceration, as the pressure on the perineum is considerable. Extraction should be very gradually

and slowly made, guarding the perineum from danger by a steady and firm support with the hand ; and directing the head upward, forward, and outward, when it begins to bear on the external parts, by elevating the handles of the forceps gradually more and more toward the abdomen of the mother.

SECTION III.

THE MANNER OF USING THE LONG FORCEPS.

THE long forceps are more difficult to use than those of ordinary dimensions, and are applicable in cases where there is such a degree of contraction at the brim, as prevents the descent of the head after the os uteri has been long dilated. They are curved in a direction corresponding with the curve of the sacrum, and may sometimes supersede the necessity of performing the operation of embryotomy. In the cases referred to, although the upper opening of the pelvis may be deficient in room, the cavity and outlet may equal or exceed the standard dimensions—a difficulty which may, by the long forceps, be often readily overcome without injury to either mother or infant.

It is necessary, before employing them, to acquire a distinct and accurate idea of the presentation and situation of the child, and the cause of the existing difficulty. It has happened that, after having submitted to the operation of embryotomy, under the care of one practitioner, the woman has been, in a future parturition, delivered by another of a living child with the long forceps. To use them successfully, the same general rules must be observed which were given in the last section, the same cautions attended to, and the rectum and bladder evacuated.

In passing the blades, the curve of each should correspond with the curve of the sacrum, and they are to be passed over the forehead and occiput of the child, instead of over the parietal bones ; the lower blade being introduced first. Having accomplished the locking, a slow and gentle movement of extraction should be made, co-operating with the pains, directing the handles from side to side without violence or any sudden exertion of force, or bearing the instrument against the parts of the mother. When the head has passed the brim, and advanced within the cavity of the pelvis, if there exist no want of room in it or at the outlet, and if the uterine contractions be strong and effective, the birth will be quickly accomplished without further instrumental assistance : the long forceps may therefore be withdrawn. But if, from exhaustion, there is a deficiency of pain—should there be hæmorrhage or other alarming symptoms, an unusually large head, or a narrowing and distortion of the pelvis, below as well as above—the forceps may be reapplied over the parietal bones, and the delivery accomplished as before described. These instruments, however, are but seldom used.

SECTION IV.

THE MANNER OF USING THE VECTIS.

HAVING detailed the method of applying the forceps, we now have to consider the mode of employing the vectis, which may be, in judicious hands, a highly-useful instrument. It ought, however, rather to be called “the tractor,” in compliance with the suggestion of one of the most enlightened and scientific accoucheurs of England. It possesses some advantages over the forceps, as it does not occupy more room in the pelvis than a single blade ; and practitioners who find a difficulty in using forceps, may with the lever succeed in rectifying mal-position at the brim ; but it is an instrument safe or not according to the manner in which it is used, and the ideas, whether clear or otherwise, of the individual who employs it. The change of certain mal-position of the head, previous to its descent, and the conversion

of an unfavorable into a vertex presentation, are advantages which can sometimes be obtained with the vectis.

Before using it, the external parts as well as the os uteri should be dilated, and the bladder and rectum evacuated. Two fingers of one hand should be placed on that part of the head to which it is intended to apply the vectis, and the blade is to be gradually, slowly, and cautiously glided under them and over the head: and if this be the occiput, it will afford sufficient hold to exert a moderate degree of extraction.

Neither the handle nor any other part of the instrument should bear at all on the soft parts; and in bringing down the head, it should be borne from side to side, and turned slowly and progressively, so as to keep its long axis in apposition with the long axis, whether of the brim or outlet—observing the curved line of the pelvis, by drawing in a direction downward, forward, upward, and outward. Thus states Severn, but we consider this instrument of little or no use.

SECTION V.

EMBRYOTOMY, AND THE SYMPTOMS WHICH INDICATE THE DEATH OF THE FŒTUS.

THE death of the child may occur either at the period of labor, or may have taken place some time before; in the latter case, it will be in a state of decomposition, more or less advanced, according to the cause of its death, and the time which has elapsed since. If life have been long extinct, its size is altered, and the bones of the head are loose; but if death has taken place during labor, or a short time before, there will be no change in the size of the head, which requires as much room for its transmission as if it were living. The causes which may destroy the child are various: those occurring during labor are, its long-continued exposure to the violent expulsive efforts of the uterus, pressing its head against the bony pelvis, and pressure on the funis, interrupting its circulation.

Accidents of any kind, falls or blows on the abdomen, may destroy the life of the child, without occasioning its immediate expulsion; or diseases in the parents, of which the venereal is one of the most frequent. We may ascertain, from several circumstances, that the child is dead: the most usual previous indications are, when the mother, who before could readily feel its movements, has found them growing gradually weaker and weaker, and after a short time they cease altogether; the abdomen sinks, and although smaller, it becomes more cumbersome—there is a feeling of coldness and weight, falling to which side soever the patient turns herself; the breasts shrink, and are flattened; the eyes are surrounded by a dark or bluish circle; the nose becomes slender, the lips pale, the tongue is white or brownish, the appetite is either impaired or lost, and the sleep is unrefreshing, and disturbed by dreams. These symptoms may continue some days, without the patient being aware of the cause whence they originate, until the membranes giving way, from incipient decomposition, there is, with or without pain, a gush of the liquor amnii, and the cord in a softened state, or one of the limbs of the child, is pushed through the os uteri; and the skin may be emphysematous, or the epidermis separating. If the head be the presenting part, the bones on examination will be felt moveable, or projecting over each other. The discharges have a peculiarly foetid, putrid smell: and from these circumstances we can decide with certainty that the child is dead.

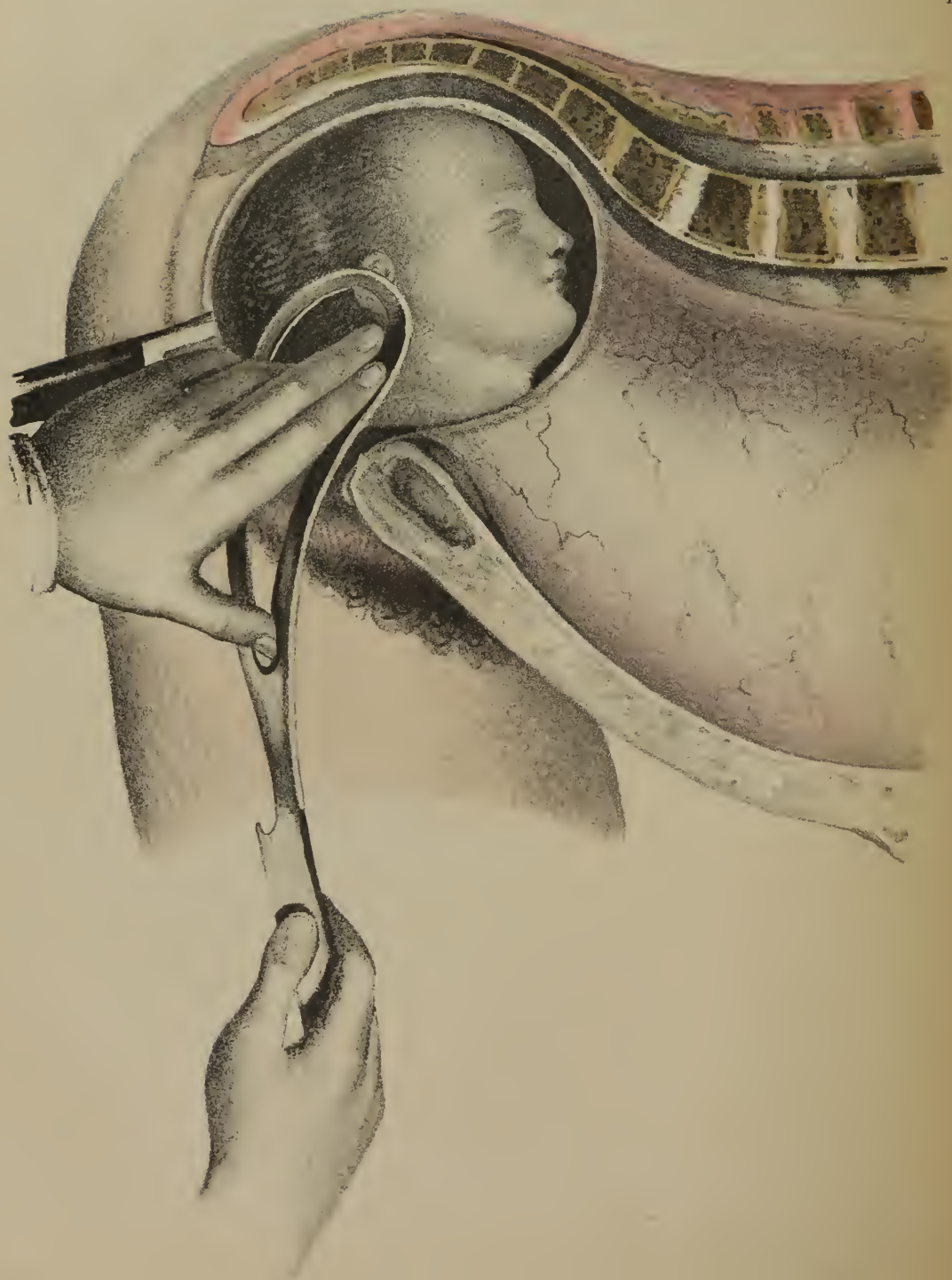
In a doubtful case as to the propriety of embryotomy, it is always advisable to have a second opinion; for it has happened that, by the gradually increasing force of the expelling powers, a living child has been born, which a hasty and negligent accoucheur has considered as a dead one. It has also happened that, soon after the perforator has been employed, and when little if any of the contents of the head has been evacuated, violent and forcing pains have come on, and pushed away a living child, which has continued to breathe for several hours. Of this horrible occurrence we could detail examples. But when the signs of death are decisive, and there is either a contracted pelvis or threatening symptoms, there can be no reason for keeping the patient in a state of suffering and danger, and embryotomy should not be delayed.

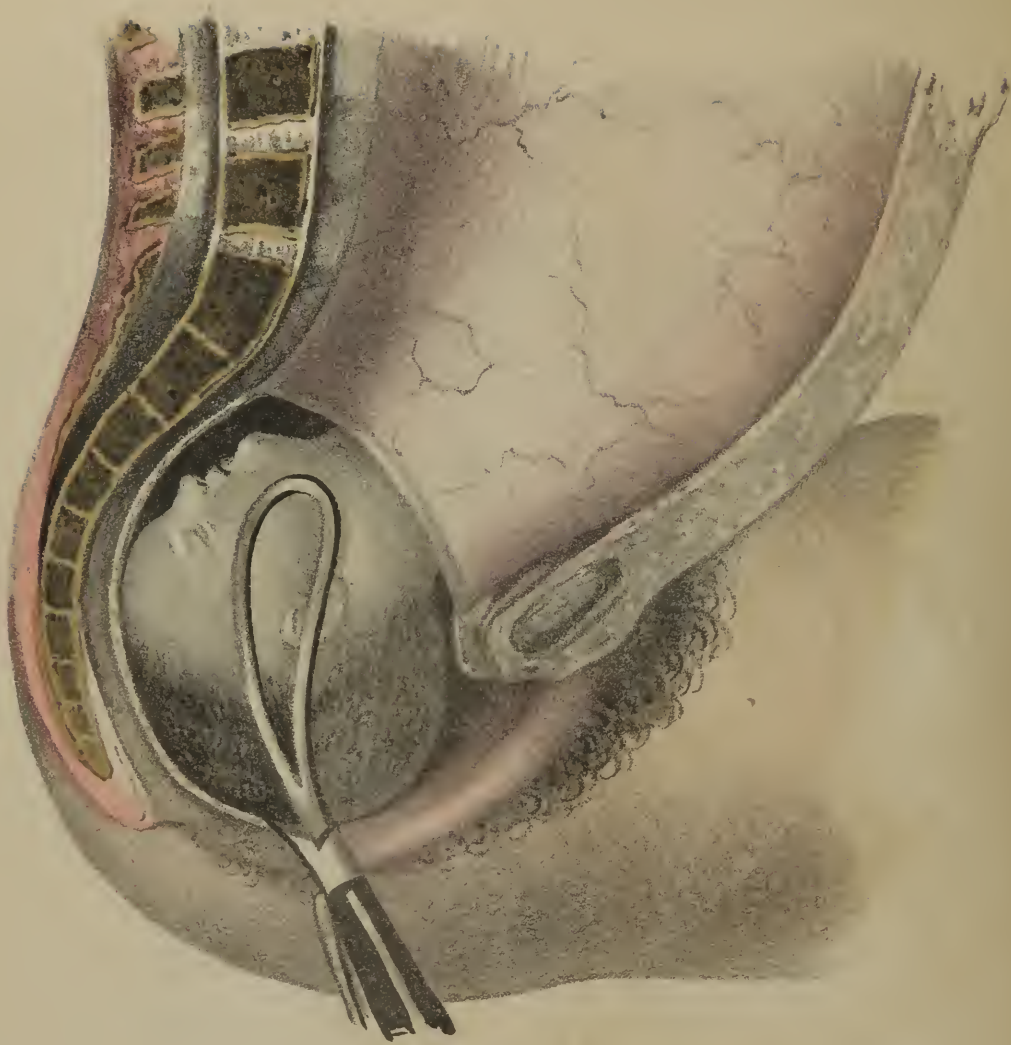


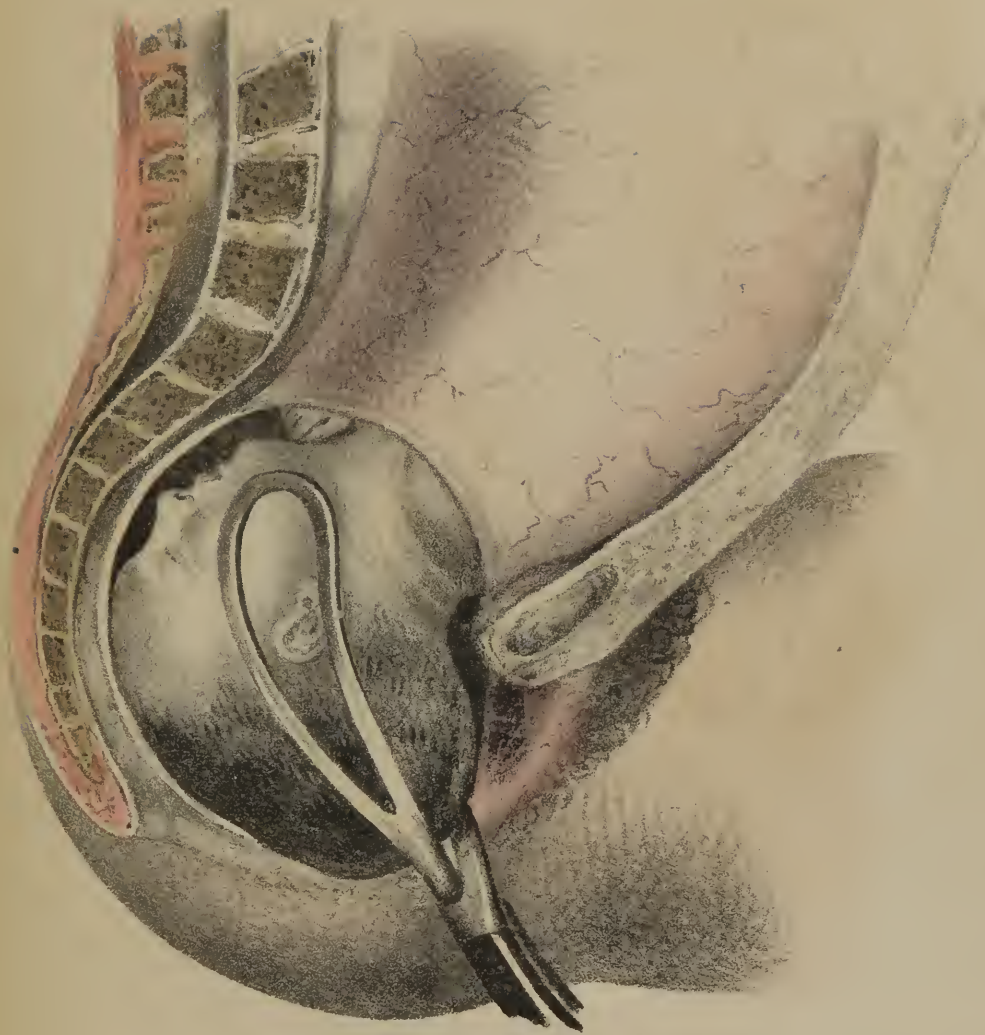


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When the head presents, and the short forceps have been tried in vain, with certain signs of a dead child, its detention may arise from narrowness of the pelvis, or in consequence of the head having become enlarged from disease, it is then necessary to open it, and, by removing the greater part of the brain, to reduce its size so as to allow it to be extracted.

The patient lying near the edge of the bed, the fore and middle fingers of the left hand are to be introduced until they reach one of the fontanelles; then taking the perforator in the right hand, it is to be passed along the hollow between the fingers, already introduced, and applied to either of the fontanelles or to the sagittal suture, keeping the instrument fixed in that position by the fingers of the left: a semi-rotary motion is given with the right to the handle of the perforator, and the summit of the instrument, once within the skull, is to be passed downward immediately toward the base; the handles are then to be separated from each other, in the long diameter of the pelvis, and turned within the skull in every direction, to break down and discharge the cerebral mass, and thus diminish the size of the head. The left hand should be kept in contact with the perforator, both while this is done and at the time the instrument is withdrawn; and a scoop may be used, or a common spoon, to remove the brain, which will be much facilitated if the opening in the direction of the long diameter be made sufficiently large to allow the brain freely to escape.

If the short forceps have been tried before employing the perforator, they may be of some service after the size of the head is reduced, which may be held by them steadily fixed, and thus the instruments employed in embryotomy can be most advantageously applied. If the handles are kept close together, as the head collapses, it can be extracted with much greater facility and safety by the forceps than the crotchet, which often breaks off a portion of bone, and thus the vagina or uterus may be excoriated or lacerated, without great caution.

It is therefore best always to use forceps for the purpose of extraction. Dr. Blundell recommends those of Mr. Holmes, which have several tooth-like processes in one blade, with corresponding concavities in the other; and they are well adapted to remove the head when in a state of collapse, after the brain has been evacuated. They should be passed, remembering the curve of the pelvis, and the *foetus* extracted downward, forward, upward, and outward, covering the rough and projecting pieces of bone, if there be any, with the fingers, to prevent excoriation, and thus the patient will be saved from unnecessary suffering. The operation of embryotomy may occasionally be required in cases of congenital hydrocephalus; but, although not an unfrequent disease at birth, it seldom obliges us to have recourse to this operation. Dr. Meigs, of Philadelphia, has invented the best instrument of this kind.

Another case requiring instrumental assistance is, the separation of the child's head, and its being left within the vagina, or uterine cavity: in consequence of the accoucheur having dragged at the feet, and not having observed the curved line of the pelvis, it is separated from the trunk, and left in utero. This will be very likely to take place, if in a state of advanced decomposition. Sometimes the action of the uterus throws it into a favorable situation to be discharged, so that it escapes without assistance, but this is a circumstance extremely rare.

In consequence of the separation having taken place at the cervical vertebræ, it lies in utero in the most favorable situation for the use of instruments. The crotchet may sometimes, directed by the finger, be made to fix upon the base of the cranium, through the *foramen magnum*, by which the head may be brought through the cavity of the pelvis; and, if this fail, the forceps before described will often without much difficulty accomplish the purpose.

The French accoucheurs are in the habit of employing in these cases an instrument called a *tire tete*, which consists of a shank of sufficient length to be passed into the uterus; it is formed of iron, and to its summit a small piece of iron is fixed, with a hinge, to the extremities of which a ligature is attached. It is to be passed into the interior of the skull, through the *foramen magnum*, with the cross-bar parallel with the shank of the instrument; and when within the cranium, by drawing the ligature, the cross-bar becomes transversely situated, and, lying across the interior of the occipital bone over the *foramen magnum*, the head can be removed with facility.

SECTION VI.

PREMATURE LABOR A SUBSTITUTE FOR EMBRYOTOMY.

WHEN there exists such a degree of deformity or contraction as to render it impossible for parturition to take place at the full time, without having recourse to the perforator, by adopting the measures hereafter described, there may be a probability in any future pregnancy of rescuing the infant from inevitable destruction, and ourselves from the necessity of performing an operation which, supposing the child is living, nothing but the inevitable injury or death of the mother, if it were omitted, we conceive can possibly justify.

The smaller size of the foetal head at seven or eight months—the less complete ossification then, than at the full period of gestation—the greater separation of the sutures and fontanelles, and therefore its easier compressibility—will in some instances allow it to pass: and the parent may thus have a living child, which must be sacrificed if it continue the full time in utero. Children born at seven months are usually weaker at first than if retained to the termination of the ninth; but there are not wanting many instances of seven months' children being reared: and, from this to the eighth month, the chances of their living are gradually increased. We are in such instances to bring on premature labor, and the evacuation of the liquor amnii is the most safe and certain means of doing this. At the conclusion of the seventh, or between that and the eighth month, the patient who has such a degree of distortion as would prevent delivery when the time of gestation is complete, should inform her accoucheur (and it is recommended that operations in midwifery should seldom or never be attempted without a second opinion); and labor may be safely brought on in the following manner:—

The patient lying on her left side, the first two fingers of the left hand being passed so as to touch the os uteri, one of them should be slowly and cautiously insinuated, without violence or hurry, until the membranes distended with liquor amnii can be felt: keeping the finger in contact with the membranes, the stilette of a catheter should be held in the right hand, and passed upon the fingers of the left; and when its point (which should rather be obtuse than sharp) reaches the ovum, a puncture should be made, giving the stilette a rotatory motion, by rubbing it between the finger and thumb of the right hand: while this is done, its point must be kept steadily in the same place, and must only touch the membranes. When the opening is made, the discharge of water will show that the object is attained, and the stilette should be carefully withdrawn. Uterine contraction may come on shortly, or a day or two may elapse before its occurrence; and, during the interval, the patient should avoid exertion, and continue as much as possible in the recumbent position.

END OF PART SECOND.

PART THIRD.

DISEASES OF WOMEN AND CHILDREN.

CHAPTER I.

SEXUAL DISEASES.

SECTION I.

CHLOROSIS, OR RETENTION OF THE MENSES.

DESCRIPTION.—It is well known that females from the age of twelve to sixteen (or according to the climate) begin to menstruate, and which constitutes a critical period in their lives, as health depends very much upon this discharge. It is liable from various causes to become obstructed at the period when it ought to appear; and when this takes place, it is attended with very painful or serious effects: and if nature is not assisted, the health is impaired, or the constitution undermined, inducing consumption or some other complaint.

CAUSES.—The remote cause of this complaint is, most frequently, suppressed perspiration; and it may arise in part from an inactive and sedentary life, and such habits as are peculiar to the higher classes of society, particularly in cities and towns.

The proximate cause of it seems to be, a want of power in the system, arising from inability to propel the blood into the uterine vessels with sufficient force to open their extremities, and to allow a discharge of blood from them.

SYMPTOMS.—Heaviness, listlessness to motion, fatigue on the least exercise, palpitations at the heart, pains in the back, loins, and hips, flatulency, and acidity in the stomach and bowels, costiveness, a preternatural appetite for chalk, lime, and various other absorbents, together with many dyspeptic symptoms, usually attend chlorosis.

As it advances in its progress, the face becomes pale, and afterward assumes a yellowish hue, even verging upon green, whence it has been called *green-sickness*; the lips lose their rosy color; the eyes are encircled with a livid areola; the whole body has an unhealthy appearance, with every indication of a want of power and energy in the constitution; the feet are affected with œdematous swellings; the breathing is much hurried by any vigorous exertion of the body; the pulse is quick, but feeble; and the person is apt to be affected with a cough and with many of the symptoms of hysteria. Sometimes a great quantity of pale urine is discharged in the morning, and not unfrequently hectic fever attends.

In cases of a more chronic character, "there is a continued though variable state of sallowness, of yellowness, or icterode hue; of darkness, or of a wan, squalid, or sordid paleness of complexion; or a ring of darkness surrounding the eyes, and extending a little perhaps toward the temples and cheeks, and sometimes encircling the mouth—without tumidity, as well as without the pallidness of the lips, already mentioned."

COMMON PRACTICE. — Bleeding, mercury, iron, salts, &c.

REFORMED PRACTICE. — As this disease proceeds from debility, it is evident that the great object to be fulfilled will be, to give tone and energy to the system; and if this debility has arisen from a sedentary life, the patient must begin immediately to exercise in the open air, and, if practicable, to change her residence. I once had a case so very violent and protracted, that the patient often had fits resembling apoplexy. I gave her medicine, and during the time she was taking it she went to the seashore, bathed, took herb-tea, and after a few weeks or months, was entirely restored to health. The change of air, bathing, &c., appeared to contribute as much to the cure as the other means made use of. The tepid or warm bath should be used in preference to the cold.

The first medicine given may be the pulverized mandrake-root, combined with a little cream of tartar, and where the stomach is very irritable, our common purgative will be found very good. This, as well as other medicines, should be taken upon an empty stomach, and, after it has been given, peppermint-tea should be freely drunk. After the exhibition of this purgative, which may occasionally be repeated, gum-aloes may be taken, combined in such a manner as will prevent the piles. This medicine, from its action upon the uterus through the medium of the rectum, is very useful in retention of the menses; and its benefit is much increased by combining it with other articles: hence we have used it in the form of the *anti-dyspeptic pill*, which answers the purpose very well. It is mild, gently laxative, and tonic; two or three of these may be taken at bedtime, or as many as are sufficient to keep the bowels in a soluble state. During the use of these pills, let the patient take the *restorative cordial*. Emenagogues, or "forcing medicines," should not be used to bring on the menses, except there be a struggle or effort of nature to effect it, and this will be known by the periodical pains and pressing down about the hips and loins. When this happens, let the feet be bathed, and perspiration promoted by drinking freely of diluent teas, such as pennyroyal, motherwort, and garden-thyme. Should considerable pains attend the complaint, eight or ten grains of the *diaphoretic powders* may be given, and fomentations of bitter herbs applied over the region of the womb.

The patient should be very careful not to expose herself to the vicissitudes of the weather; the feet or clothes should not be suffered to become wet; warm clothing should be worn, and particularly flannel. Chalybeate waters, such as Ballston and Saratoga, have been taken with success in this complaint. The diet should be light, nutritious, and easy of digestion. The following is excellent: tincture of aloes, four ounces; mercurial tincture of iron, half an ounce; dose, a teaspoonful in water night and morning.

SECTION II.

AMENORRHŒA, OR SUPPRESSION OF THE MENSES.

DESCRIPTION. — By this disease we understand a partial or total obstruction of the menses in women from other causes than pregnancy and old age. The menses should be regular as to quantity and quality; and that this discharge should observe the monthly period, is essential to health. When it is obstructed, nature makes her efforts to obtain for it some other outlet; when these efforts of nature fail, the consequence may be fever, pulmonic diseases, spasmodic affections, hysteria, epilepsy, mania, apoplexy, chlorosis, &c., according to the general habit and disposition of the patient.

Any interruption occurring after the menstrual flux has once been established in its regular course, except when occasioned by conception, is always to be considered as a case of suppression. A constriction of the extremities of the vessels of the uterus, arising from accidental circumstances, such as

cold, anxiety of mind, fear, inactivity of body, the frequent use of acids and other sedatives, &c., is the cause which evidently produces a suppression of the menses. In some few cases it appears as a symptom of other diseases, and particularly of general debility in the system. Herein there is a want of the necessary propelling force or due action of the vessels.

When the menstrual flux has been suppressed for any considerable length of time, it not unfrequently happens that the blood, which should have passed off by the uterus, being determined more copiously and forcibly to other parts, gives rise to hæmorrhages: hence it is frequently poured out from the nose, stomach, lungs, and other parts, in such cases. At first, however, febrile or inflammatory symptoms appear, the pulse is hard and frequent, the skin hot, and there is a severe pain in the head, back, and loins. Besides being subject to these occurrences, the patient is likewise much troubled with costiveness, colic-pains, and dyspeptic and hysteric symptoms.

Our prognostic in this disease is to be directed by the cause which has given rise to it, the length of time it has continued, and the state of the person's health in other respects. When menstruation is suddenly suppressed in consequence of cold, it may easily be restored by pursuing proper means; but where the suppression has been of long standing, and leucorrhœa attends, we ought always to consider such circumstances as less favorable, though not incurable.

COMMON PRACTICE.—Bleeding repeatedly, antimony, mercury, &c.

REFORMED PRACTICE.—It will be necessary in the treatment of this disease, to remove urgent symptoms if they are present. If the patient be in severe pain, give ten grains of the diaphoretic powders, and at the same time let a strong infusion of garden-thyme and pennyroyal be freely given; the feet should likewise be immersed in warm ley-water, and rubbed well with flannel. If relief be not obtained in the course of an hour, or in a very short time, a strong decoction of bitter herbs should be thrown into a proper vessel, and the patient steamed fifteen or twenty minutes—as long as she is able to bear—or until perspiration is produced; and, immediately afterward, let her be put in bed, covered warm, and the herbs be enclosed in flannel or muslin, and applied to the lower part of the abdomen or belly. This process will almost immediately relieve the urgent symptoms. After this, our next object will be, to regulate the menstrual discharge, by a proper course of strengthening medicine; and that recommended under the head of *chlorosis, or retention of the menses*, may be taken with advantage. Inasmuch as this complaint, like the preceding, proceeds from debility, it is evident that this debility must be removed in order to effect a cure; and therefore that medicine and treatment which strengthen and invigorate the system will invariably benefit the patient. The skin, stomach, and intestines, all seem concerned in the production of this disease, and hence our attention should be directed to a restoration of their proper offices: the stomach and bowels should be cleansed, and stimulated to a healthy action; perspiration must be promoted; and, in short, every secretion and excretion of the system.

If the stomach is in a morbid condition, let an emetic occasionally be given, after which a dose of mandrake; both of which may be repeated as occasion requires. The patient may then take the following tonic bitters:—

Take prickly-ash bark.....	two ounces;
Wild cherry-tree bark.....	two ounces;
Seneca snake-root.....	one ounce;
Tansy.....	one ounce;
Gum socotorine-aloes.....	half an ounce;
Devil's-bet.....	two ounces;

Pulverize, and to every two ounces of the powder add half a pint of boiling water and one quart of Holland gin. Half a wine-glass may be taken three or four times a day; this may be continued while it agrees with the patient, or as long as benefit is derived.

About once a month there will generally be felt more or less symptoms preceding a catamenial discharge. Considerable pain will be felt through the lower part of the abdomen, hips, and loins, showing that there is a strong effort or struggle of nature to return the menses. Our principal object when this occurs should be, to aid her salutary efforts, as directed in the preceding complaint: the patient should

sit over the steam of bitter herbs for ten or fifteen minutes, retaining the steam by means of a blanket, to concentrate it upon the lower part of the body ; at the same time the feet should be bathed, and tansy-tea freely drunk. The abdomen should also be fomented, as before directed. It will not be necessary, however, to use these means except there is an obvious indication to return the menses.

It must be recollected that, when the patient labors under some other disease, there is such debility, that there is not superfluous blood sufficient to keep up the menstrual discharge ; and in this case, our attention must be directed to the primary affection, without any regard to such symptoms ; and it is also very necessary to bear in mind the fact that the menses are often suppressed from pregnancy, and the physician will be applied to, to return them, with a view to procure abortion. No man possessed of any principle will ever be guilty of prescribing medicine in such a case with a view to return them. Such conduct would be very criminal, and an indictable offence. Great rewards or remuneration are in such cases held out to the practitioner : but as he values his reputation, character, and conscience, let him never yield to the temptation.

By a proper attention he can always discriminate between a suppression of the menses and pregnancy ; and the principal diagnostic symptom is, that in the former complaint there is a pain or an affection of the head, attended with dizziness.

Lieutaud makes the following remarks upon this subject : " Those who are desirous to cure this disease, ought strictly to inquire whether there be any suspicion of pregnancy : since numberless pseudo-virgins, or wanton little prostitutes, are met with, who are impregnated, and by every art endeavor to conceal their very scandalous situation ; under the semblance of curing this pretended disease, they desire to be bled in the saphœna, in hope of future abortion ; so that even the most guarded are daily deceived."

If the preceding treatment does not cure the disease, which will seldom if ever be found the case, if persevered in, the patient may take fifteen or twenty grains of the euphor ipecacuanha about twice a week in a little molasses ; and a tea made of the green ozier may likewise be drunk through the day. This will be found an excellent medicine.

I once attended a case of amenorrhœa which had existed for two years, and the abdomen had gradually acquired an enormous magnitude—much larger than a female in the last month of pregnancy ; and after having tried all my ordinary remedies to return the menses, I succeeded with the following treatment : I first gave a tea or infusion of digitalis or foxglove ; in the next place, a purgative was ordered once or twice a week. During the same time the patient was ordered to drink freely of parsley-tea ; and the whole abdomen was rubbed twice a day with sweet-oil, and as often with white precipitate ointment.

From the very time that the patient commenced this treatment, the belly began to subside ; in a short time the courses returned ; she soon entirely recovered her health, and has been well for many years. Having exhausted my skill in trying all ordinary remedies, I resorted to this treatment as an experiment, or as the last alternative, and never was a medicine more strikingly successful. The cure was a matter of astonishment to all who witnessed it : the abdomen was perfectly tense and hard, and appeared almost in a state of scirrhus. Of the *modus operandi* of the medicine, I must leave the reader to judge.

Some physicians have been very much in the habit of using the "golden tincture"—made by adding spirits to black hellebore and logwood, till a saturated tincture was formed, and then giving one or two teaspoonfuls three or four times a day.

A person informed me some years ago that a physician on Long island cured his wife of obstructed menses, which had placed her life in the greatest jeopardy, and which other physicians could not remove. The following formula was used :—

Take tincture of gum-myrrh,
" " castor, equal parts.

Give a spoonful three or four times a day.

Since writing the preceding remarks upon this complaint, I administered a dose of mandrake for a bilious complaint to a young woman who had been afflicted with partial or deficient menses for many

years, and which not only removed the symptoms for which it was given, but likewise returned the menses.

Since writing the foregoing, also, a gentleman has come a distance of forty miles to obtain relief for his daughter, who has been laboring under a spasmodic affection from suppressed or obstructed menses. Two physicians have attended her, and pursued the usual course of bleeding, &c., the effect of which has been, as I predicted, an aggravation of the complaint: the bleeding soon induced greater spasms, and finally convulsions. I explained to the father the nature of the disease, and gave him my opinion that it proceeded, not from repletion or excess of blood, as his physician stated, but from an *unequal circulation*, or an undue quantity thrown upon the brain. He then stated that her feet and legs were as cold as a dead person's, showing evidently a recession of blood from these parts to the head. After stating my views and treatment of the disease, he appeared forcibly struck with the difference between my views and those of other physicians, exclaiming, "How you doctors do differ!"

Dr. Tidd, with whom I studied, was in the habit of giving a preparation which has been attended with great success, and which I have formerly been in the practice of giving. He procured it from some person in the section of the country where he resided, who obtained great celebrity for removing this disease. It is made as follows:—

Take gum-myrrh.....	four ounces;
flowers of sulphur.....	four ounces;
steel-filings.....	four ounces;
loaf-sugar.....	four ounces;

Pulverize, and simmer all in a quart of wine, until the mass becomes nearly dry; after which remove from the fire, and when dry, pulverize. Of this let the patient take half a teaspoonful two or three times a day. Some prefer taking the same quantity in the form of pills. Under the treatment here laid down, I know not that I recollect a single instance of failure.

The following case occurred within my knowledge: A young lady had labored under almost a total suppression of the menses for many years. She had tried almost every kind of medicine, without receiving the least benefit, and her case appeared utterly hopeless. She was advised to apply to a woman who was very noted for curing this disease only. She called upon her, stated her symptoms, received a box of pills, and took them according to her directions: the effect of which was, the natural return of the catamenial discharge, and perfect restoration to health. The father presented me with a few of the pills, which I found to be composed of about four parts of white turpentine gum, and one part of sulphate of iron (green vitriol), formerly called *sal-mortis*—two or three pills of the same to be taken at a dose three or four times a day.

SECTION III.

DYSMENORRHEA, OR PAINFUL AND IMPERFECT MENSTRUATION.

DESCRIPTION.—Besides the two deviations from the usual course of nature already mentioned, there sometimes occurs a third, viz.: where menstruation, although not wholly suppressed, is nevertheless somewhat difficult, and accompanied with severe pains in the back, loins, and bottom of the belly.

This disease is owing to a weak action of the vessels of the uterus, or spasm of its extreme vessels; and is to be obviated by tonics, warm bathing, both topical and general, together with the use of anodynes, which should be employed as soon as the symptoms that denote its approach are apparent.

This complaint is a common and generally an extremely harassing affection. It may occur at every period during the menstrual stage of life, but it appears to be most common between the twentieth and thirtieth years of age, and in subjects of an irritable and sanguineous temperament. In many instances severe pains are experienced in the back, loins, and lower part of the abdomen, for five or six hours

previous to the appearance of the menstuous evacuation. This, however, soon ceases, and an immediate aggravation of the torturing pain follows. Sometimes the catamenia begin to flow moderately, with little or no previous pains; but in an hour or two they suddenly become arrested, at the same time that violent pains come on in the hips, hypogastrium, loins, back, and thighs, with a distressing sensation of forcing or bearing down in the pelvis. Occasionally a very slight menstrual discharge continues uninterrupted for three or four days, accompanied throughout with extremely severe pains in the pelvis and lower portion of the abdomen; and in some rare instances the catamenial evacuation, although attended with great suffering, is sufficiently copious and prolongs in its course, and may even exceed the regular duration and quantity of an ordinary healthy menstruation.

COMMON TREATMENT.—Mercury, &c.

REFORMED PRACTICE.—Since it is well known that a derangement in the uterine functions must generally proceed from a check of perspiration, astringing the minute ends of the uterine vessels, or in some manner deranging their functions, causing debility, &c., it will appear clear that our first attention must be directed to the skin. Cold appears to be the cause of the disease, and heat seems to remove it. Therefore, when these periods of distress occur, let the patient sit over a strong decoction of bitter herbs, such as tansy, horehound, wormwood, catnep, and hops, while a blanket is thrown around the waist of the patient, to confine the steam to the lower parts. After the patient has been thus steamed, and the feet bathed, let the person be put into a bed warmly covered, and diluent drinks given, such as tansy, thyme, pennyroyal, &c.; at the same time let fomentations of the same herbs enclosed in a flannel bag be applied to the abdomen as before directed.

This will produce perspiration, and afford immediate relief; and when these distressing symptoms are removed, and the patient becomes comfortable, a course of treatment must be adopted to prevent a recurrence of these symptoms, or to produce a natural flow of the catamenial discharge, and similar to that recommended under the two preceding complaints. A tea made of the bark of green ozier may be drunk freely.

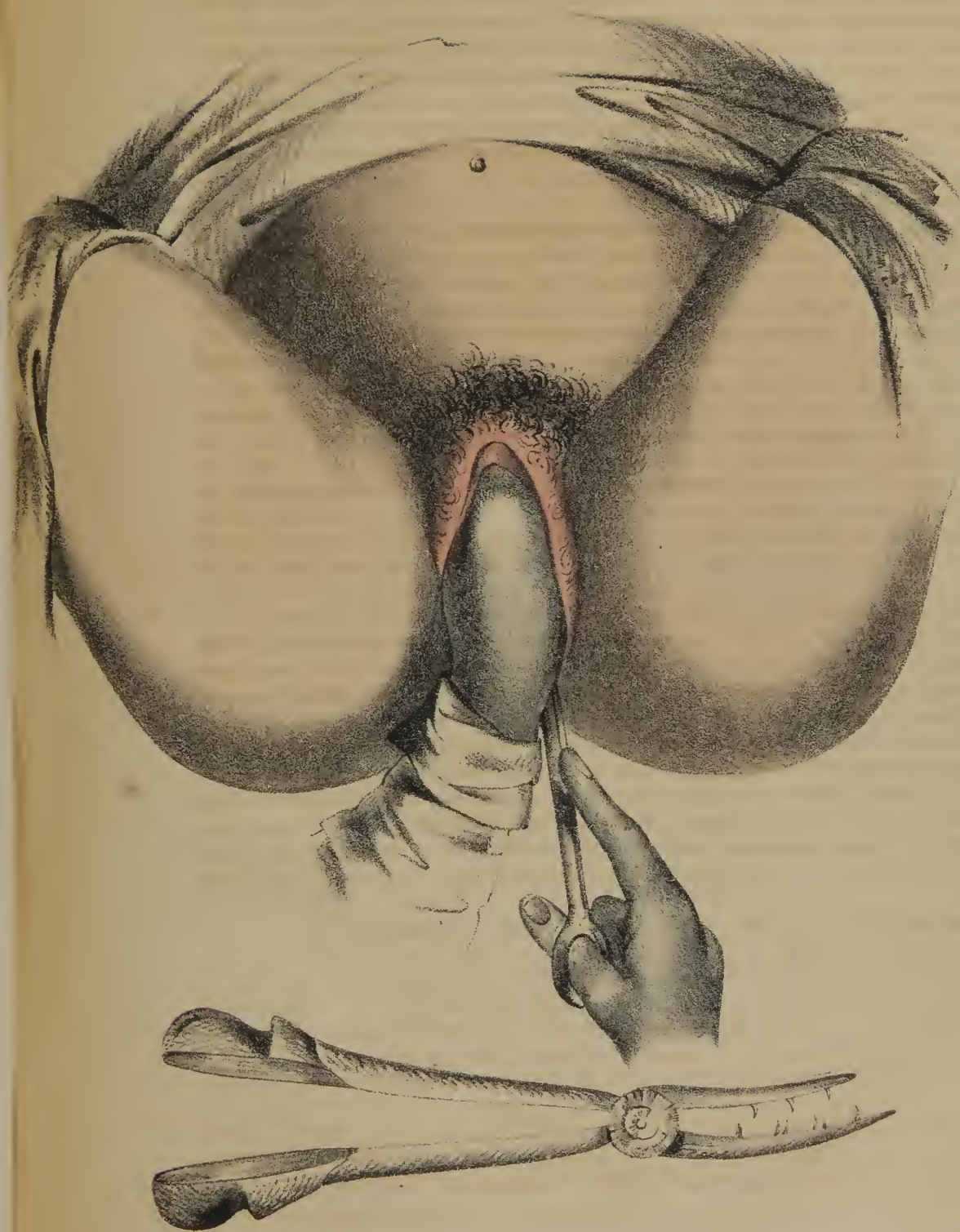
A writer on this subject thus remarks: "This case of painful menstruation deserves particular attention, because it impairs the health of patients by its present effects, and seems to render them less prolific in future. Dr. Fothargill has afforded relief to several by the following process: Let the patient have by her a few pills, consisting of opium, one grain in each, made soft with a little of any kind of conserve. She is to take one of these pills the moment she finds the pain attending this discharge coming on; a pill may be taken every hour till the pain goes off; and more than two of these pills will seldom be required, but it must be taken in such a quantity as to mitigate the pain. Let the patient keep either in or upon the bed, at least in a recumbent posture, drinking moderately of any diluting liquor, as the herb-teas, weak whey, or thin broth. When the time is past, a course of chalybeate bitters, in small doses, may be continued till within a few days of the return; and the bowels should be kept open with some proper laxative. This excruciating pain seems to be spasmodic, and to proceed from the extreme irritability of the uterine system."

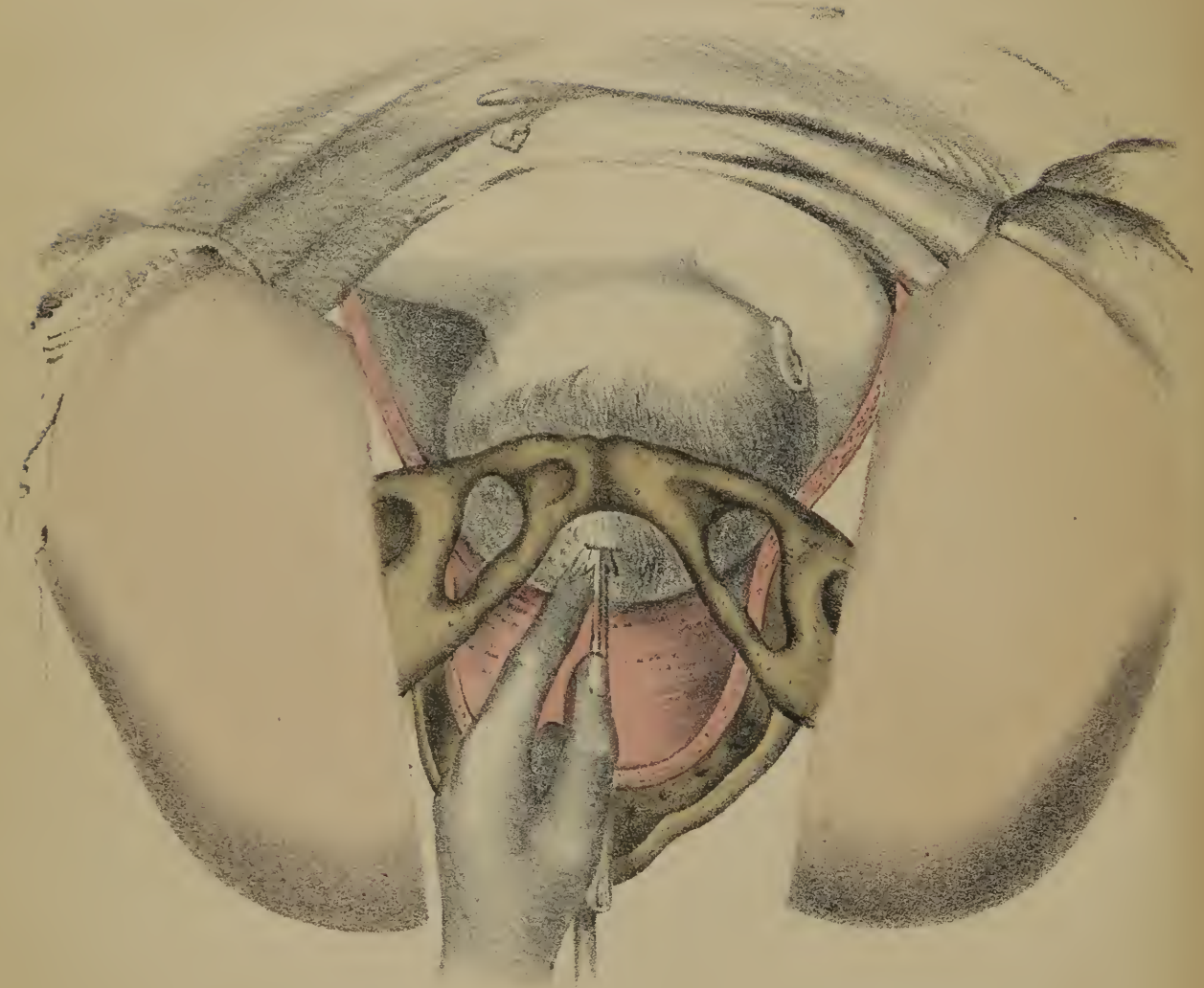
The diaphoretic powders will be found very useful. Diet and exercise are important.

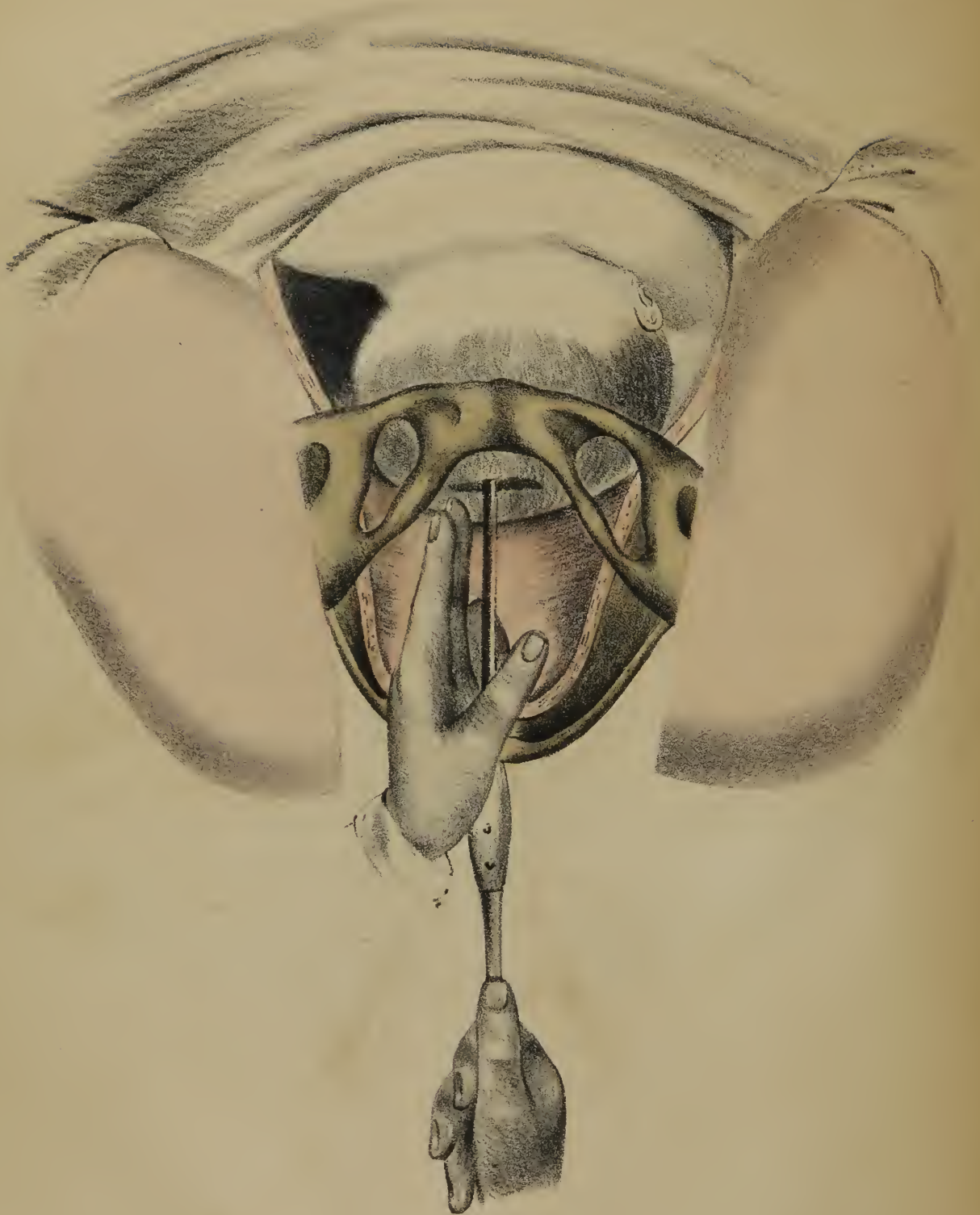
SECTION IV.

HYSTERIA, OR HYSTERICIS.

DESCRIPTION.—*Hysteria* or *hysterics* is characterized by a grumbling noise in the bowels, followed by a ball ascending to the throat, attended with a sense of suffocation, stupor, insensibility, convulsions, laughing and crying without visible cause, sleep interrupted by sighing and groaning, attended with flatulence.









Hoffman calls the hysteric affection "a cohort of diseases." Sydenham compares it, for the infinite variety of its forms, to Proteus, and, for the mutability of its appearances, to a chameleon. It is attended with more or less delirium.

CAUSES.—This disorder may be produced by various causes. It usually arises from certain passions operating upon a feeble constitution.

The persons most liable to this disease are females, from the time of puberty to the age of thirty-five, unmarried women, and young widows, chiefly those of the sanguine temperament, of a relaxed habit, of great sensibility, and of an irritable fibre—more especially after profuse evacuations, whether sanguine or serous; the indolent, and those who are exhausted, either by long-protracted fevers or habits of intemperance; and such also in whom the uterine hæmorrhage is unseasonably stopped or habitually obstructed. Can we therefore hesitate to assign, as the predisponent cause, debility with morbid irritability?

SYMPTOMS.—The disease attacks in paroxysms or fits. These are sometimes preceded by dejection of spirits, anxiety of mind, effusion of tears, difficulty of breathing, sickness at the stomach, and palpitations at the heart; but it more usually happens that a pain is felt on the left side, about the flexure of the colon, with a sense of distention, advancing upward till it gets into the stomach; and, removing thence into the throat, it occasions by its pressure a sensation as if a ball were lodged there, which by some authors has been called *globus hystericus*. The disease having arrived at this height, the patient appears to be threatened with suffocation, becomes faint, and is affected with stupor and insensibility; while at the same time the trunk of the body is turned to and fro, the limbs are variously agitated, wild and irregular actions take place in the alternate fits of laughter, crying, and screaming; incoherent expressions are uttered, a temporary delirium prevails, and a frothy saliva is discharged from the mouth. The spasms at length abating, a quantity of wind is evacuated upward, with frequent sighing and sobbing, and the woman recovers the exercise of sense and motion without any recollection of what has taken place during the fit; feeling, however, a severe pain in the head, and a soreness over the whole body. In some cases there is little or no convulsive movement, and the person lies for some time seemingly in a state of profound sleep, without either sense or motion.

Hiccup is a symptom which likewise attends in some instances on the hysteric disease; and now and then it happens that a fit of hysteria consists of this alone. In some cases of this nature it has been known to continue for two or three days, during which it frequently seems as if it would suffocate the patient, and proceeds, gradually weakening her, till it either goes off, or else occasions death by suffocation: but this last is extremely rare. Besides hiccup, other slight spasmodic affections sometimes wholly form a fit of hysteria, which perhaps continue for a day or two, and then either go off themselves, or are removed by the aid of medicine.

In some cases the patient is attacked with violent pains in the back, which extend from the spine to the sternum, and at length become fixed upon the region of the stomach, being evidently of a spasmodic nature, and often prevailing in so high a degree as to cause clammy sweats, a pale, cadaverous look, coldness of the extremities, and a pulse scarcely perceptible.—THOMAS.

DISCRIMINATION.—Hysteria differs from the hypochondriac affection in the following particulars: it attacks more generally the sanguine and plethoric; comes on soon after the age of puberty, makes its attacks suddenly and violently, and deprives the patient of sensation and voluntary motion. It is accompanied with a sensation of a ball rising in the throat with a sense of suffocation, and is attended usually with a spasmodic affection.

The reverse happens in hypochondriasis: it attacks the melancholy; seldom occurs till after the age of thirty-five; is a tedious disease, and more difficult to remove. Another difference may be pointed out between the two diseases, which is, that hysteria is much relieved by advancing in age; whereas, hypochondriasis usually becomes aggravated.

The two diseases have often been confounded together; but, from duly considering the foregoing circumstances, it appears that a proper line of distinction should be drawn between them. The hysteric passion likewise differs from syncope: as in this there is an entire cessation of the pulse, a contracted

face, and a ghastly countenance ; whereas, in the uterine disorder, there is often somewhat of a color, and the face is more expanded ; there is likewise a pulse, though languid ; and this state may continue two or three days, which never happens in syncope.

It also differs from apoplexy, in which the abolition of sense and voluntary motion is attended with a sort of snoring, great difficulty of breathing, and a quick pulse—which do not take place in hysteric cases.

It differs from epilepsy, in that this is supposed to arise in consequence of a distention of the vessels of the brain ; whereas, in hysteria, the spasmodic and convulsive motions arise from a turgescence of blood in the uterus, or in other parts of the genital system. Hysteria may be distinguished from epilepsy by the *globus hystericus*, by the great flow of limpid urine, by the sudden transitions from laughing to crying, and by the fear of death preceding and succeeding to the paroxysm.

However dreadful and alarming an hysteric fit may appear, still it is seldom accompanied with danger ; and the disease never terminates fatally, unless it changes into epilepsy or mania, or the patient is in a very weak, reduced state.

COMMON TREATMENT.—Bleeding copiously and repeatedly, sulphate of zinc, mercury, antimony, &c. Is it not passing strange that the very practice should be recommended and pursued by physicians which more often proves an exciting cause of the disease than anything else ? Every one knows that the nervous and the feeble are the subjects to this complaint. With what propriety, then, can blood-letting be practised, when it so invariably aggravates the characteristic symptoms of it ? I have seen delicate persons nearly bled to death, when every successive paroxysm was induced by the very practice !

REFORMED PRACTICE.—In the cure of hysteria, two indications are to be attended to : the first is, to allay the spasmodic symptoms which constitute the fit ; and the second, to lessen the excitability of the nervous system, and strengthen the whole frame during the intermissions of the paroxysms.

During a fit, the patient's dress should be loosened, so that the circulation and respiration may be as little as possible embarrassed ; cold water should be sprinkled (or rather dashed) over the face, the body laid in a recumbent position, with the head elevated, and a current of air admitted into the apartment. The attendants may be employed in rubbing the temples, abdomen, and extremities. Five or six persons are often in the habit of clinching the patient during a hysteric fit, and confining her to the bed, or in a certain position ; but this practice should be avoided.

It is best to use only force sufficient to keep the patient from injuring herself or her attendants. When she suddenly rises and springs from the bed, allow as much latitude, liberty, and motion, to the body and limbs, as possible.

If the patient discovers a disposition to roll upon the floor—to use the language of the late Professor Smith, of New Haven, “ let her roll.”

When called to treat the disease during the paroxysm, the first object will be, to suspend or shorten it. To this end, such measures must be adopted as have a tendency to divert the blood from the centre of the circulating system to the extremities ; in other words, to equalize the circulation and nervous excitement. That there is such unequal circulation, is very evident from the coldness of the extremities—the feet, the hands, and the surface—while there is a morbid or altered condition of the head or brain. It will therefore be of the first and greatest consequence to *immerse the feet and legs in very warm water*. It is altogether useless to prescribe medicine, until such means have been taken as are calculated to restore the balance of the circulation and the nervous influence.

Having attended to the first step in the treatment of hysteria, it will be necessary in the next place to administer an anti-spasmodic, or such medicine as will aid in cutting short the paroxysm. I have found the following medicine preferable to any other, where there were no symptoms to contra-indicate the use of an emetic : I allude to the tincture of lobelia. A tablespoonful may be taken, diluted with a little tea or water, between the fits, provided there be an intermission, as there is in most cases. It acts as a *nervine*, having a powerful tendency to allay the irritability of the nervous system ; it removes the rising in the throat, sense of suffocation, and the phlegm or mucus collected upon the stomach, while at the

same time it throws the blood to the surface and extremities, and makes such an impression upon the brain and nervous system, that the paroxysm is often cut short by a single dose, even under the influence of spasms. Where the teeth are tightly clinched, a small quantity of this tincture introduced into the mouth, and between the teeth, will relax the muscles, cause the patient to open her mouth, and enable her to swallow. Should it be, however, from any cause, impracticable to administer medicine internally, administer the following injection or *clyster* :—

Take a strong infusion of catnep.....	one pint;
milk.....	half a pint;
sweet or olive oil.....	one gill;
molasses.....	one gill;
laudanum.....	a small teaspoonful;
fine salt.....	“ “

Mix, and let the whole be, if possible, introduced at a time, blood-warm, with a French syringe.

This alone rarely fails to moderate the symptoms very speedily, and to induce a complete intermission of the spasmodic action.

It will be necessary also to apply fomentations to the abdomen. The following may be used :—

Take hops, wormwood, and tansy, equal parts.

Boil an hour or two in vinegar-and-water, and apply to the abdomen; to be renewed as often as it grows cold. This course will soon bring about an intermission of the hysteric fit. I have seldom known a failure where it has been properly attended to.

Should it fail, however, from any cause whatever, give to the patient a pill of opium containing about three grains, or about the size of a pea. This is infallible under all circumstances and in all cases. I have prescribed it where a number have attended the person (under the influence of hysteric fits for a whole day), and, in an hour or two, the patient was free from pain, and convalescent. I have now spoken of the treatment of hysteria during a paroxysm; and having suspended it, our next object will be, to prevent a recurrence, which the patient is very liable to: and this must be effected by restoring the tone of the system.

We may commence by giving a moderate cathartic; this will cleanse the stomach and bowels, and prepare the way for medicine. After the operation of it, an aperient pill must be taken to regulate the bowels, which in this complaint are habitually constipated; for this purpose, I give a mild preparation, denominated the *anti-dyspeptic pill*: it acts mildly upon the bowels, without leaving them costive; neither does it induce any nausea or griping. Two or three should be taken at bedtime, in a little currant-jelly or roasted apple, to be continued until the bowels become regular. This is very necessary, as the complaint is often induced by an inactive or torpid state of them, causing foetid gases and feculent matter to accumulate in the intestines.

During the day, the patient should take from half a wine-glass to a wine-glass of the restorative cordial or bitters. This preparation invariably improves the condition of the patient: it creates an appetite, gives tone and energy to the nervous system, and prevents a recurrence of the hysteric paroxysm. The following infusion may be taken with this preparation :—

Take wild valerian, or lady's-slipper;
skunk-cabbage: equal parts.

Add sufficient boiling water to make an infusion, to be taken cold through the day, and particularly with a view to allay that extreme irritability of the nervous system which causes wakefulness or want of sleep, and which, indeed, is one of the characteristic symptoms of the complaint. This infusion is nervine and anti-spasmodic.

Where we wish to effect a radical cure, a mild emetic may be given once a week. Our common emetic powders answer the best purpose of any preparation with which I am acquainted. It is only necessary to excite gentle vomiting, which contributes much toward the cure by imparting tone and energy to the stomach and nerves.

Where the hysteria assumes a lingering or chronic character, mild emetics are very valuable. Dr. Dean, of Harrisburg, speaks of their efficacy in the following language. He says: "In some cases where the patients had labored under the disease for ten years, and during that time had, by the advice and direction of respectable physicians, exhausted (with at most but temporary benefit) the whole class of remedies which are usually prescribed, I have, by the continued exhibition of vomits, either entirely removed the complaint, or so far interrupted the habits of the diseased action in the stomach, that anti-spasmodic and tonic medicines would, in general, complete the cure."

Dr. Tidd was very much in the habit of administering the following preparation, which he called "the hysteric pill:"—

Take gum-assafœtida.....four parts;
salts of hartshorn.....two parts;
gum-opium.....one part.

Dissolve the gum-assafœtida over a slow fire, then combine it with the opium, which should be soft; and afterward add the salts of hartshorn, made fine. Let the whole be well incorporated together, and roiled into pills of about two grains each: one or two of these to be given at a dose, particularly when there are any cramps or hysteric symptoms.

The above treatment with me has been uniformly and invariably successful. I have been called to the patient when she has been nearly destroyed by the lancet, with a succession of paroxysms occasioned by it—irritable, delirious, extremely feeble, countenance almost as white as marble; and, by discontinuing such practice, and substituting the course here recommended, a remission of all the hysteric and nervous symptoms has followed, with convalescence and recovery.

The following is the preparation so highly extolled and recommended by Sir Astley Cooper:—

Take salts of hartshorn (*carbonate of ammonia*).....half a drachm;
mint-water (*aqua mentha virode*).....one and a half ounces;
compound tincture of cardaman.....(*comp. tinc. cardaman*) half an ounce.

Mix, and give two tablespoonfuls three times per day.

REGIMEN.—There is no disorder that requires more care and attention as regards diet, soothing or kind treatment, &c. Nothing harsh or censorious must be said to the patient, or anything calculated to arouse the passions or emotions of the mind; she should be kept as quiet and composed as possible: no sad intelligence is to be suddenly imparted, if at all; the mind to be kept as free as possible from every kind of anxiety. She must avoid great fatigue or labor—nursing of infants who are too old—and, in short, every cause of debility. She must exercise often in the country, or in the open air; she must never overload the stomach, but use a nutritious diet, and such as easily digests.

Some years ago, I was called to a young lady of this city, recently from England, or Canada, laboring under this complaint, which had been brought on by adversity. She had become reduced from a degree of affluence to great poverty; and, being ashamed to make known her situation, she submitted to great privation. She was finally assisted by a religious society; but a sense of her former and present situation produced great nervous debility, hysterics, together with more or less delirium. A physician of this city had greatly aggravated her symptoms by his treatment: he bled her until her countenance became like marble, her strength gone, confined to the bed with great irritability of the nervous system, &c. Besides, the family with whom she resided did not treat her kindly. All these circumstances rendered her truly miserable. I now reversed the treatment, and received her into my family, endeavored to treat her with tenderness, in addition to proper medical treatment. The change was surprising: all her unfavorable symptoms vanished; her appetite returned, her flesh, and her reason—strength and spirits; in short, she entirely recovered, and has remained well, at least ten years.

CHAPTER II.
DISEASES OF PREGNANCY.

SECTION I.

PREGNANCY.

AS SOON as the female becomes pregnant, many new symptoms follow, such as sickness at the stomach, heartburn, peculiar longings, indigestion, headache, giddiness, &c.

The breasts become enlarged, shooting pains extend through them, and the circle around the nipple alters to a dark-brown color; there often occurs likewise a feverish disposition, with debility, emaciation, irritability, and peevishness of temper, and a total alteration of the countenance, every feature of which becomes sharpened. Some women breed so easily as to experience hardly any kind of inconvenience whatever; while others, again, are perfectly incapable of retaining the least thing on their stomach, and are thereby reduced to a state of extreme weakness.

With some women the vomiting will continue during the whole or greater part of the second stage of pregnancy, as well as the first; but this does not usually happen. Partial suppressions of urine, with a frequent inclination to void it, itching about the external parts of generation, costiveness, tenesmus, and the piles, are what they are chiefly incommoded by during this period. Most women quicken about the sixteenth week after conception, at which time the mother becomes sensible of the slightest efforts of the child; and besides the complaints just enumerated, she will then be liable to sudden faintings and slight hysteric affections.

According to the commonly-received opinion, quickening, so termed, has been generally understood to commence at the time when particular sensations are perceived by the mother, supposed to be occasioned by the first motion of the child. The most usual time of feeling any such symptoms is about the latter end of the fourth or beginning of the fifth month of pregnancy: at this period, the uterus, filling up the pelvis, slips out and rises above the rim; and, from that sudden transition, women of a delicate constitution and irritable fibre are apt to faint, more particularly so if in an erect position.

During the last three months, or third stage of pregnancy, general uneasiness, restlessness (particularly by night), costiveness, œdematous swellings of the feet, ankles, and private parts, cramps in the legs and thighs, difficulty of retaining the urine for any length of time, varicose swellings of the veins of the belly and lower extremities, and the piles, are the affections which usually prove most troublesome. In weak, delicate women, of an irritable habit, convulsive fits sometimes arise, which are ever to be regarded in a dangerous light.

SECTION II.

PARTICULAR SYMPTOMS OF PREGNANCY.

SICKNESS OF THE STOMACH.—Some women are incessantly harassed by nausea, or sickness of the stomach, and that during the whole period of gestation or pregnancy. For this symptom the patient should take the following preparation:—

Take saleratus (*bi-carbonate of potash*).....one drachm;
distilled peppermint-water.....eight ounces.—Mix.

Of this let a tablespoonful be taken occasionally, to be accompanied with the use of spearmint-tea. Soda-powders have also been found very serviceable to allay the irritability of the stomach in such cases; but the best preparation that I have ever found to relieve the sickness of the stomach attendant on pregnancy is, an infusion or tea made of the rose-willow bark (*cornus sericea*): this has proved in my hands exceedingly valuable. The bowels must be regulated by gentle laxatives.

HEARTBURN.—For the heartburn, which sometimes takes place in pregnancy, let the mixture be given mentioned under the head of *sickness of the stomach*. If this fail, let large teaspoonfuls of carbonate of magnesia be taken morning and evening in a little milk or syrup.

LETHARGY, HEADACHE, &c.—When there is a sense of fulness in the head, with giddiness and plethora, a dose of our common *physic* should be given; the feet must be immersed in warm ley-water, and mustard-plasters applied to them. A vegetable and spare diet should be strictly adhered to: this will prevent the necessity of bleeding.

COSTIVENESS.—If costiveness supervene, laxative medicine must be taken; but it is always better to regulate the bowels by stewed fruits, such as apples, peaches, prunes, &c.

PILES.—For the piles, apply the *stremonum ointment*, and obviate costiveness by the use of cream of tartar and flower of sulphur, &c.

SUPPRESSION OF URINE.—For the suppression of urine, let half a wine-glass of best Holland gin be taken in a tumbler of spearmint-tea. If this fail to afford relief, apply fomentations over the region of the bladder, and drink freely of parsley-tea.

TOOTHACHE.—To relieve the toothache, a few drops of the oil of cloves, red pepper, or any other essential oil, applied to the affected tooth, will often remove it for the time.

LONGINGS.—It is always desirable to gratify the peculiar longings of pregnant women: otherwise they are apt to miscarry, from the anxiety these occasion, when not indulged in them. That the child in the womb can be marked by any depraved appetite of the mother, or be mutilated by any disagreeable sight that may be present to her, although perhaps not readily admitted by the majority of medical men, yet numerous instances are afforded of the marking of children in so singular a manner, that we can scarcely refer them to any other than the above causes, operating powerfully on the imagination of the mother during a critical period of gestation. (For more extended observations on this subject, see accounts of remarkable cases under the head of *naevus materna*, or “*mothers’ mark*,” pages 77, 78.)

SWELLING AND PAIN IN THE BREAST.—Sometimes the breasts become swollen and very painful. To obviate this symptom, great care should be taken that no part of the dress be tight over the breasts, and they should be rubbed with a little sassafras-oil morning and night.

PALPITATION OF THE HEART.—When this affection occurs during pregnancy, it is usually from a disordered state of the stomach, and it must therefore be cleansed by moderate doses of *physic*: fifteen or twenty drops of the tincture of digitalis to be taken three or four times per day in a little tea.

SWELLINGS.—There are often puffy swellings in advanced stages of pregnancy, particularly toward evening. For this symptom, bathe the feet often, and apply fomentations of bitter herbs.

CRAMPS.—For cramps of the legs and thighs, which often occur, let the parts be rubbed with tincture of capsicum; the feet must be often bathed in warm water, and the legs should be well covered with flannel.

WAKEFULNESS, &c.—For wakefulness, want of sleep, &c., give the tincture or extract of hops at bedtime, and let exercise be taken through the day.

FALSE PAINS.—False pains, resembling those attendant on actual labor, are apt to come on at a late period of pregnancy, often occasioning unnecessary alarm. Confinement in a horizontal position, laxative medicines if costive, and giving small and frequent doses of some opiate until the patient finds relief, may in such cases be necessary.

CHAPTER III.

DISEASES FOLLOWING DELIVERY.

SECTION I.

AFTER-PAINS.

Soon after delivery, these usually come on, and with some women prove remarkably severe. The quicker the labor has been, the slighter will they prove in general. Women with their first child are seldom much troubled with after-pains; but as the uterus is thought to contract less readily after each future labor, so they are more liable to suffer from them in any succeeding delivery than in the first.

When after-pains prove so troublesome as to deprive the patient of her rest, it will be necessary to have recourse to fomentations or anodynes: red pepper and spirits simmered together a few minutes, and flannels dipped in it and applied to the belly, will generally relieve them. If it fail, apply a fomentation of bitter herbs, and give two teaspoonfuls of the tincture of hops in milk or tea. If this fail, which I never knew, give fifty drops of laudanum. These means are to be assisted by keeping up a sufficient pressure on the belly at the same time, by means of a broad bandage.

COSTIVENESS.—This is apt to prevail after delivery, and should always be removed by a laxative clyster, or some gentle purgative, such as senna and manna, or about an ounce of the *oleum ricini*, or castor-oil.

SECTION II.

UNDUE FLOW OF THE LOCHIA.

In all women a certain degree of hæmorrhage usually takes place after delivery, produced by the removal of the placenta, which thereby lays bare the mouths of the blood-vessels in the inside of the uterus; and this commonly continues until the womb contracts to such a size as to close them up again. The discharge for the first four or five days consists usually of florid blood, after which time it assumes a mucous appearance, and so ceases gradually.

In weak and relaxed habits, it sometimes happens that, instead of saturating a cloth now and then, as is natural to all women, the blood gushes out with such rapidity and violence as to run quickly through all the bed-clothes, and even to soak through the bed itself, in which case the patient will be reduced to a state of great debility if the hæmorrhage is not soon restrained. To effect this, the feet must be immediately immersed in warm water; and if there is great pain in the abdomen, a fomentation of hops and wormwood must be applied, and the following powder given internally:—

Take diaphoretic powders.....ten grains;
capsicum, or Cayenne pepper.....ten grains.—Mix.

If the pain and hæmorrhage be considerable, give the whole; otherwise give one half, and, in an hour, give the other. At the same time administer a strong decoction of the black cohosh and bethroot; apply

cloths wet with vinegar, spirits, and rain-water, to the abdomen and over the vagina. If this does not check the discharge in a short time, let the patient take alum-whey. Pouring cold water on the abdomen, over the region of the uterus, from a height of four or five feet, will generally arrest the flooding immediately.

Where a suppression of the lochia ensues before the accustomed period, the discharge ought again to be promoted, if possible, by plentiful dilution, and the application of warm fomentations to the parts. Should these means prove ineffectual, gentle evacuations from the bowels must be made, the feet bathed, and perspiration promoted.

SECTION III.

PUERPERAL FEVER.

DESCRIPTION.—This is a disease peculiar to women after delivery, particularly in lying-in hospitals, and is supposed to occasion the death of nearly one half who die in child-bed. Three fourths of those who have been attacked have fallen victims to it. It commences, in general, three or four days (sometimes a week) after delivery; and it appears to occur oftentimes as an epidemic.

CAUSES.—Various reasons have been assigned as the cause of puerperal fever, but none very satisfactory seems as yet to have been given. A check of perspiration, from cold, combined with a moist and unhealthy state of the atmosphere, probably gives rise to it. Morbific matter is retained, enters the circulation, and is thrown upon some of the viscera of the abdomen, exciting inflammation and other symptoms of the complaint; or it may cause the complaint, by mixing with the circulating mass.

The late Dr. Young, professor of midwifery at Edinburgh, was of opinion that the puerperal fever, strictly so called, is in every instance the consequence of contagion; but he contends that the contagious matter of this disease is capable only of producing its effects, in consequence of a peculiar predisposition given by delivery and its results. In support of this doctrine he remarks, in a paper read in the "Philosophical Society" of Edinburgh, that for many years the disease was altogether unknown in the lying-in ward of the Royal infirmary in that city; but that after it was once introduced into the hospital, almost every woman was, in a short time after delivery, attacked with it: although prior to delivery she may have lain even for weeks together, not only in the same ward with the infected, but even in the very next bed. He further remarks that it was only eradicated from the hospital in consequence of the wards being entirely emptied, thoroughly ventilated, and newly painted: after these processes, puerperal females in the hospital remained as free from the disease as formerly.

With respect to the infectious nature of this fever, a great contrariety of sentiment has indeed existed: the probability is in favor of its being so; but it is nearly impossible to form a decided opinion on the subject. Doubtless it will be the safest practice to consider it as infectious, and to cut off all intercourse of pregnant and parturient women with those who labor under it.

It is certain that puerperal fever has a strong tendency to the typhoid type in an advanced stage, although at its commencement, or during the first twenty-four or thirty-six hours, it is usually attended with inflammatory symptoms, and even with topical inflammation in the abdominal viscera, but more particularly in the peritoneum, or membrane which envelopes them.

SYMPTOMS.—Puerperal fever commences with rigor or chills, which are succeeded by great heat, and frequently ends in perspiration; but its characteristic symptom, by which it is always accompanied, is pain in the region of the uterus, which, although generally attended with remarkable aggravations, resembling after-pains, has no complete intermission as they always have. It is increased by motion, attended by extreme soreness and tenderness to the touch, and accompanied by a pulse so rapid as to rise to one hundred and forty or one hundred and sixty in a few hours after the attack.

The pulse, especially during epidemic complaints, although full and strong, and but moderately quick,

at the very commencement of the disease, in a few hours becomes very rapid, running up to one hundred and sixty strokes in a minute, and is then proportionably small; at the same time the patient's strength rapidly fails, her countenance expresses great pain and anxiety, and her head is frequently affected with pain, giddiness, and with a ringing in her ears. The secretion of milk is generally suppressed, and the breast becomes suddenly flaccid. The bowels in the commencement are generally costive, but a diarrhœa is soon apt to come on. The belly swells to a great extent, and the tenderness is spread over the whole abdomen, compelling the patient to lie immoveable in one posture, with her extremities drawn up, and generally on her back; although such is the extreme tenderness, that she can not bear the weight of the bed-clothes. The tongue soon becomes foul; the stomach is oppressed with nausea; and the teeth collect a brown *sordes*. The breath is offensive; purple or red spots appear; and extreme debility comes on sooner in this than in any fever which begins with such decided symptoms of inflammation, and makes a sudden and total change of its nature into that of a putrid and malignant fever.

This complaint frequently attacks within forty-eight hours; usually within five days after delivery; and in general, the earlier the attack, the more violent are its symptoms. It runs through its course in a very short period of time, ending in death in a few days: indeed, a great and sudden mortality, particularly in some epidemic constitutions, has proved the most distinguishing as well as the most terrible characteristic of the disease. In some epidemics, very few indeed, in others it is said none have recovered: some patients have died within eighteen hours, and most of the fatal cases have ended within three or four days; but when it has ended in recovery, the symptoms have often been protracted to six or eight days, with occasional but irregular intermissions and exacerbations; and it has been remarked that, after very considerable remissions—indeed, after such complete intermissions as to afford the most sanguine hopes of recovery—the attack has been renewed with increased danger.

Such, in general, is the course of the puerperal fever; the symptoms of which, however, may be often varied, according to the constitution of the patient, the degree of the disease, and its earlier or later invasion after delivery.

PROGNOSIS.—The reappearance of the lochia, and a gradual subsidence of the abdominal tension and soreness after copious stools, the pulse at the same time becoming slower, with a moist skin, may be regarded in a very favorable light. On the contrary, an agitated countenance, with a hurried, unconnected manner of speaking, constant sighing, attended with a tossing about of the arms, pain and oppression at the chest, visual deceptions, imaginary strange sounds and voices, muttering and stupor, are to be considered as unfavorable symptoms. An extensive swelling of the belly, so as to sound on striking it with the fingers, sudden cessation of pain, irregularity of the pulse, coldness in the extremities, clammy moisture diffused over the whole body, frequent dark-colored and fœtid evacuations by stool, and an indifference to all external objects, denote certain and speedy death.

DISSECTION.—The morbid appearances observed on dissection are usually confined to the abdomen. The first thing that often presents itself is a collection of whey-like fluid in the cavity of the abdomen, which is sometimes so considerable in quantity as to amount to several quarts; and it has a peculiarity of smell different from that of any other fluid to be met with in the human body, either in health or disease. Where it is large in quantity, the surfaces of the different viscera and of the peritoneum will usually be found covered with a crust formed of a solid part of this matter, resembling coagulated lymph. If there be any interstices between the intestines or the other viscera, they are frequently filled with large masses of the same, adapted exactly to the shape and size of such interstices. In a few cases, a deposit of a caseous and serous nature has been discovered likewise in the head, breast, and external cellular membrane. In most instances, there is found a slight degree of inflammation in some part of the cavity; but it is not confined invariably to any particular place: as the uterus, ovaria, peritoneum, omentum, intestines, and bladder, have all in their turn been observed in a state of inflammation. In many cases of dissection, a considerable quantity of purulent matter has likewise been found in the cavity of the abdomen.

COMMON TREATMENT.—Bleeding, profusely and repeatedly, mercury, blisters, opium, &c.

REFORMED PRACTICE.—It requires no discernment to see the pernicious effect of the preceding practice. Some bleed five or six times in succession, which soon sinks the patient into the arms of death. Mercury is also given at the same time, which hastens dissolution.

INDICATIONS OF CURE.—The principal indication in the cure of this disease is, to subdue the inflammatory symptoms: to effect which, sweating and purging are the two herculean remedies to be relied on.

Some prescribe emetics in puerperal fever, but I have very little confidence in their utility. The *sweating-drops* must be given in doses of a teaspoonful in a tumbler of catnep-tea every two hours until free perspiration is produced. Physicians in general place their greatest reliance on copious bleeding. We place *our* greatest reliance on copious perspiration. It must be continued until the inflammatory symptoms subside. Bathing the surface and feet greatly promotes it.

Purgatives are exceedingly important in reducing this fever. For this purpose give saffron and snake-root tea, which should be repeated at least once a day. If vomiting supervenes, administer the saline purgative :—

Take Epsom salts.....	eight ounces;
hot or boiling water.....	eight ounces;
muric acid.....	one drachm.

Give a tablespoonful in a tumbler of mint-tea every hour till it acts upon the bowels. This stops the vomiting, allays the heat, and in every respect acts favorably.

“To alleviate the soreness and distention of the abdomen, we may recommend the application of fomentations both inwardly and externally: inwardly, by injecting every four or six hours, and administering emollient clysters from time to time; and externally, by applying flannel cloths wrung out in a warm decoction of equal parts of camomile-flowers and bruised poppy-heads, with an addition of about one third of rectified spirits, over the whole region of the abdomen; and these ought to be renewed as often as they become cold, taking due care that they are not so wet as to run about the bed and incommode the patient.”

After suitable evacuations, diaphoretic powders may be given, particularly at bedtime. The dose must depend on the severity of the pain, and the age and constitution of the patient; it may be repeated every two hours until there is a mitigation of the symptoms and a moisture of the skin.

Should putrid or malignant symptoms commence, yeast must be given—as much as the stomach will bear. Wine and porter may likewise occasionally be given; an infusion of camomile-flowers, cold, may also be taken to keep up the strength of the patient, with nourishing diet, &c. Dr. Guinot recommends ten or twelve grains of the carbonate of potash to be given in any proper vehicle three times a day, not only in puerperal fever, but in all diseases connected with the secretion of milk. This treatment he recommends under the idea that the disease is occasioned by a predominance of acid. Other practitioners likewise speak of its good effects.

REGIMEN.—A very light, cooling diet should be used in the commencement of the disease; and in the latter stages of it a more nutritious diet is recommended, such as Indian-meal gruel, panado, toast, and bread-water, barley-water, rice-water, &c.

PRECAUTION.—“It would appear,” says an experienced physician, “that the effluvia of a patient under puerperal fever is an animal poison *sui generis*, capable of acting on pregnant females, their situation giving the predisposition necessary for the operation of its influence. The usual mode of communicating the infection in private practice is by being delivered by some accoucheur who has lately been attending a woman laboring under puerperal fever, or her being visited by female friends who have been where it prevailed. It therefore behooves every practitioner, when he meets with the disease, to observe every possible precaution in changing his clothes, and by careful ablution of his hands to guard against conveying infection to other parturient women: moreover, all pregnant women should be excluded from the house; nor should the nurse or other persons about the sick be permitted to go abroad and visit women in a stage of pregnancy.

“To prevent the disease from occurring, it will be proper to keep the patient’s mind, both before, during the time of labor, and afterward, as free from every kind of uneasiness as possible, as anxiety might greatly predispose to an attack of it. She should likewise carefully avoid any exposure to the infection of fever before delivery, as well as to the occasional causes of it afterward. Every woman lately delivered ought cautiously to guard against cold; but, in doing this, her room should at the same time be kept of a proper temperature by allowing a sufficient ventilation.

“It being a well-known fact that puerperal fever has been chiefly confined to close apartments and small hospitals—and that since the lying-chambers have been made more airy and commodious, and the hospitals larger, the disease seldom prevails epidemically, or becomes general—due attention should be paid to a free ventilation; for it is by no means improbable that a cool air in a lying-in chamber will frequently prevent, and its opposite be likely to induce, the phenomena of puerperal fever.

“The patient should observe the strictest cleanliness, both as to herself and the bedding. On the coming of the milk, her breasts ought to be drawn repeatedly throughout the course of the day, by some person accustomed to the business, or by applying the child; her body should be kept perfectly open after she is delivered, as well as before her confinement, by some mild purgative medicine, and she should abstain from all food of a heating or irritating nature.

“An upright posture will be most proper, in order to discharge more readily any putrescent matter that may be in the uterus.”

When the disease prevails as an epidemic among puerperal women, or occurs in a lying-in hospital, all communication ought immediately to be cut off between those who are affected and such as have lately lain in, or expect shortly to do so; and in order to root out the disease and stifle contagion, we should have recourse to fumigations, and afterward to painting, whitewashing, and a free ventilation. Vinegar should be frequently burnt in the patient’s room, particularly after the bowels have been evacuated. The hands, body, and face of the patient may occasionally be bathed with vinegar. Bitter and aromatic herbs may be kept continually in the room; if it is in the winter season, let these herbs be boiled with vinegar and water, and the vapor from them be diffused through the room. This is not only very refreshing to the patient, but it likewise prevents the spread of the contagion. As little noise as possible should be permitted, and the patient must be kept cool and quiet.

SECTION IV.

MILK-FEVER.

ABOUT the third or fourth day after delivery, the breasts generally become turgid and painful, from the secretion of milk which then takes place in them. When this is moderate and free, no inconvenience will be experienced; but when copious, and accompanied by any obstruction in the lactiferous tubes, in consequence of the use of some repellant application, or of an exposure to cold, the breasts will then become hard, swelled, and painful, and a small fever will arise, accompanied by nausea, restlessness, pains in the head and back, and a considerable degree of thirst.

To prevent any consequences of this kind, it will always be advisable to apply the child to the breast at a very early period after delivery. By delaying to do so immediately on the secretion of milk commencing, the breasts are not only apt to become much enlarged and distended, but the nipples are often so much retracted, that the child can not lay hold of them without the greatest difficulty.

Where the mother’s milk will not admit of her suckling the child, or any other thing happens to prevent it, she should be careful to have her breast drawn three or four times a day by some other person; and with the view of preventing a copious secretion of milk, she should use a very spare diet, keep her body perfectly open with laxative medicines, and abstain as much as possible from all liquids. This

mode of proceeding will be far preferable to the use of repellant applications to dry up or put a stop to the secretion.

If any degree of fever arises, besides confining the patient to a spare diet, keeping her very quiet, and obviating costiveness by means of cooling laxatives, bathe the feet and promote perspiration.

SECTION V.

INFLAMMATION AND TUMORS OF THE BREAST.

From exposure to cold, and neglecting to put the child at an early period to the breast, or to get them drawn by some other person, accidents of this nature happen very frequently to lying-in women.

The same practice should be adopted in this case of inflammation as in every other, and the discussion of the tumor ought to be attempted on its first appearance; the distress and pain which always attend on a suppuration of the breasts being very great. When the inflammation and swelling have been of such long standing as to show an evident tendency to suppurate, any attempt to discuss the tumor will not be advisable.

Where discussion is proper, recourse should be had at a very early period to a strict pursuance of the antiphlogistic and discutient plan. The strength is to be supported by a cool, spare diet; the body is to be kept perfectly open with mild laxatives; febrile heat is to be abated by refrigerants; pain and irritation are to be allayed by sufficient doses of the diaphoretic powders; and the inflammation, when considerable, is to be abated by means of fomentations applied to the part, as likewise by the application of linen cloths dipped in some sedative lotion. To assist the effect of these means, the breasts are to be evacuated frequently throughout the course of the day, but more particularly the one diseased, either by the infant or some other person accustomed to the business. When they are so much swelled as not to allow of laying hold of the nipple, the proper glasses made for that purpose should be employed.

If the tumor proceeds to suppuration, notwithstanding we may have used every endeavor to prevent it, we should then assist the operations of nature by the application of emollient poultices and fomentations. As soon as the suppuration is completed, the tumor should be opened, after which it may be dressed with dry lint, and a plaster of black salve be laid over all. Should any fresh suppuration ensue, which not unfrequently happens, the same mode of treatment must be adopted; and that proper pus may be formed, the restorative cordial, with a moderate quantity of wine, will be necessary.

SECTION VI.

PHLEGMASIA DOLENS, OR MILK-LEG.

THIS disease is not of very frequent occurrence; but it is occasionally met with in women a few days after delivery, and is evidently of an inflammatory nature, not only affecting the limb, but also the whole system in some degree. Some cases do occur in which the complaint is not confined to only one of the lower extremities, but occupies both of them; and it sometimes happens that, after it has subsided in one limb, the other has been attacked in a similar way.

SYMPTOMS.—The disease is marked by a firm, glossy, elastic, and painful swelling, of a white or pale color, which pretty suddenly seizes the leg, foot, and thigh of a woman some days after her delivery of the child, and thence extends upward to the external parts of generation, groin of the side affected, and loins. The attack is generally preceded by a sense of coldness over the whole body, with shiverings, which are succeeded by febrile heat, thirst, and an acceleration of the pulse. At first the patient

experiences a stiffness, weight, and pain in the limb, which are much increased upon her making any attempt to move it or the lower portion of the body. After a time the extremity becomes very tender to the touch, but shows no discoloration; it is, however, hotter than what is natural, and feels much fuller than usual. When pressed upon with the finger, very little indentation takes place, and what does occur is soon effaced. If a puncture is made into the limb, no fluid in general is discharged; but should any escape, it does not coagulate.

In the course of some days (say from six to twelve), the febrile symptoms diminish, and the swelling, heat, tension, and tenderness of the affected limb, begin to abate, first in the upper part of the thigh, and afterward in the leg and foot. The febrile symptoms having gone off, the patient experiences considerable debility, and the extremity feels stiff, benumbed, heavy, and weak. It seldom returns to its original size, but on the contrary remains enlarged throughout life.

CAUSES. — This disease is occasioned by tedious and difficult labors, exposures to cold, by getting out of bed too soon, the suppression of natural secretions, particularly the lochial discharge and flowing of the milk, or by improper treatment of the woman after delivery. Some physicians have assigned an obstruction or rupture of the lymphatic vessels of the part, as a cause of the complaint. It seldom terminates fatally, and but very rarely is followed by any suppuration in the parts affected.

TREATMENT AND REGIMEN. — Due regard must be paid to the stage in which the disease exists. During its first or inflammatory stage, if the febrile symptoms run high, perspiration must be promoted, the bowels must be well opened by some gentle cathartic, and then the circulation be determined to the surface of the body, and a gentle moisture of the skin promoted.

The limb may at the same time be well fomented with flannel cloths wrung out in a warm decoction of hops boiled in vinegar.

During the first or inflammatory stage of the disease, the patient must be restricted to a cooling and low diet; but, in the last, more effective nourishment should be allowed her, together with a use of wine — proportioning both to the existing degree of debility.

SECTION VII.

PROLAPSUS UTERI, OR FALLING OF THE WOMB.

THIS complaint is frequently met with among women who have had many children or frequent miscarriages, particularly those of a delicate constitution and with lax fibres. Sometimes it is occasioned by rising too soon out of bed after delivery, and before the parts have regained their usual tone or strength. In single women it now and then takes place, from lifting some heavy weight, jumping, dancing, or some violent exertion during or soon after menstruation; and occasionally it has arisen as a consequence of the whites long continued.

The disease is usually accompanied by a sense of bearing down, as also pains in the back, groins, and private parts, which unpleasant symptoms are relieved by a horizontal position. In some cases the womb only falls lower than it ought to do; but in others, it protrudes beyond the external parts. Before the tumor appears outwardly, there is sometimes a considerable discharge of a mucous fluid, but this is generally lessened when the protrusion takes place.

A falling of the womb, although a local disease, is often productive of distressing symptoms which injure the woman's general health: and these arise from the functions of the stomach and bowels being impaired, and the nervous system somewhat affected.

TREATMENT. — In slight cases of this complaint, confining the woman a good deal to a recumbent posture upon a sofa or hair-mattress, instructing her to make use of cold water, and, by means of a large sponge, well wetting the back, bottom of the belly, and parts more immediately concerned, and the

injecting a little of the fluid up the vagina by means of a syringe, will sometimes be sufficient, particularly if assisted by a nutritive diet, and medicines of a strengthening nature, such as the restorative cordial. Costiveness must at the same time be guarded against, by taking, if necessary, some gentle laxative—observing, however, not to excite the bowels to over-action, as this would be injurious.

In cases of long standing, and which resist the simple ablution and injecting with cold water, or where there is a considerable discharge of mucus or other matter, it will then be necessary to substitute some more powerful injection, such as a decoction of oak-bark, in which is dissolved a little alum.

Where the womb protrudes, it ought to be replaced by laying the woman on her back, applying the fingers and thumb to the lower part of the tumor, and then by a gradual and gentle pressure carried upward into its centre, and continued, the parts are to be returned to their natural place. This being effected, a proper-sized sponge is to be introduced, and the woman kept in a recumbent posture for several hours; the sponge ought to be introduced as high up the vagina as can be borne easily, and it must occasionally be removed and well cleansed. As the parts recover their proper strength and tone, one somewhat of a smaller size should be substituted. It will be necessary to use a bandage, made by passing a piece of linen, of a suitable width, just above the hips, and fastened on the right or left side of the abdomen with tapes or buttons; a piece fastened to this behind, brought between the legs, and secured to the bandage around the body; likewise in front, or before, in the same manner.

A woman afflicted with this complaint, and who becomes pregnant, will not require the use of the sponge after the third month, and, by being very cautious after her delivery, may perhaps be able to prevent any return of the disorder. Let her not therefore be in too great a hurry to quit her bed; and when sufficiently recovered so to do, she should avoid as much as possible for some time an erect position, and all active exercise, or much exertion.

SECTION VIII.

INFLAMMATION OF THE WOMB.

AN inflammation of the womb is a dangerous and not unfrequent disease after delivery. It is known by pains in the lower part of the belly, which are greatly increased upon touching; by the tension or tightness of the parts; great weakness; change of countenance; a constant fever, with a weak and hard pulse; a slight delirium, or raving; sometimes incessant vomiting; a hiccup; a discharge of reddish, stinking, sharp water, from the womb; an inclination to go frequently to stool; a heat, and sometimes total suppression of urine.

This must be treated like other inflammatory disorders, by fomentations, purgatives, and sudorifics. The drink may be thin gruel or barley-water; in a cup of which, half a drachm of nitre may be dissolved, and taken three or four times a day. Clysters must be frequently administered, and the belly should be fomented with hops simmered in vinegar.

SECTION IX.

EXCORIATED NIPPLES.

FROM the constant state of inoisture in which these parts are kept with those who give suck, such occurrences are very apt to happen. When excoriations do arise, these parts should be washed often with borax-water, and then be sprinkled with a little powder of elm-bark; afterward a plaster of the healing or black salve applied. This will soon cure them. The infant may be nursed, notwithstanding these applications.

SECTION X.

ATROPHY FROM SUCKLING.

SOME women of a delicate constitution can not suckle long without an evident appearance of declining health; and if persisted in, it might terminate in a general wasting of the body and loss of strength, or some morbid affection of the lungs. When, therefore, a woman finds her health declining, and that she gets weaker every day, with languor and loss of appetite, she ought immediately to leave off suckling: she should use a very generous diet, with a moderate quantity of wine daily; and, if convenient, change the air, particularly if an inhabitant of a large and populous city or town. If the change is not found sufficiently efficacious of itself, when conjoined with a restorative diet, a course of tonics should be given. Gentle exercise on horseback or in a carriage will greatly assist the effect of these remedies.

CHAPTER IV.

DISEASES OF CHILDREN.

SECTION I.

STILL-BORN INFANTS.

INFANTS are sometimes born without showing any appearance of life; but where this, at the same time, is only suspended (not totally annihilated), the apparent cessation of the action of the heart and lungs may be owing to a variety of causes—such as universal weakness of the vital powers; collections of glairy matter in the windpipe; or a congestion of blood in the lungs, arising either from a long-protracted labor, and consequent detention of the head in the passage, or the neck of the infant being tightly encircled by the navel-string or the mouth of the womb, so as to stop the circulation of the blood.

When the infant shows little or no signs of life after a tedious labor, it ought to be cleansed, and then be wrapped up in flannel, having first well rubbed its chest with volatile spirits mixed with brandy, and stimulated its nostrils with volatile salts. Should these means fail in reanimating it, we may introduce a pipe or flexible catheter into its mouth, and thereby endeavor to fill the lungs with air, and make them perform the office of respiration: which plan ought to be persevered in for a considerable time. Besides these means, the infant may be immersed in a warm bath, in order that a proper degree of heat may be restored to its body. In all such cases it will be of the utmost consequence also not to detach the after-birth too soon from its connexion with the womb, and not to be in a hurry to apply a ligature on the navel-string. These are the first steps to be attended to.

If a portion of the glairy fluid in which the child floats in the womb gets into the windpipe or the mouth, and renders the breathing difficult or rattling, its throat ought not only to be well rinsed and washed out, but it should be placed in an attitude that will facilitate the discharge of the fluid; that is, by laying its head lower than its body. This being done, endeavors should be made to reanimate the infant: first, by inflating the lungs in the manner before mentioned, and then pressing on the chest to extricate the air—imitating thereby natural respiration.

Where there is either stupor present, or congestion in the lungs, it will be advisable to lessen the determination of the blood to the head or chest, by suffering a small quantity of blood to be lost from the divided navel-string prior to putting a ligature round it. — THOMAS.

SECTION II.

RETENTION OF THE MECONIUM.

THE bowels of all infants at the time of their birth are filled with a blackish-colored and viscid matter of the consistence of syrup, known by the name of *meconium*. The efforts of nature are in general sufficient to dislodge and carry it off, if assisted by the mother's milk, which is always at first of a laxative quality, and therefore infants should be applied to the breast as soon as they show an inclination to suck. But should it be retained, or not sufficiently carried off, a small teaspoonful of castor-oil, or a little senna-tea may be given, particularly if the secretion of milk in the mother's breast is rather tardy.

SECTION III.

ACIDITIES, FLATULENCY, AND GRIPES.

THE species of food most commonly employed for the nourishment of children being of an acescent nature, is apt to turn sour on the stomach, particularly if the body be any way disordered. Hence most of the complaints of children are accompanied with evident signs of acidity, such as flatulency, griping pains, and stools of a green color. The child so affected becomes restless, cries much, and draws up its legs forcibly to its body; is troubled with sour belchings, vomiting, or purging, and not unfrequently becomes convulsed.

Newborn infants, until they are about three months old, are apt to be affected with much distress from flatulence (or wind), or some of the causes mentioned. An infusion or tea made of the flowers or leaves of catnep will always afford relief. Sometimes a few fennel-seeds may be added, with a little gin. If the pain be very great, and prevents the infant from sleeping, one or two hops may be added, and the tea sweetened with loaf-sugar: a few spoonfuls of it may be given.

It answers a much better purpose than paregoric, or any other preparation of opium: affording relief without producing costiveness, nausea, or any other unpleasant symptom. Sometimes, however, it may become necessary to give some preparation of opium, such as paregoric, or syrup of poppy.

To remove offending matter, it will be sometimes necessary to give the infant about two grains of saleratus and rhubarb, mixed in a little peppermint-water, or tea-and-water, with loaf-sugar. The medicine, at the same time that it occasions a gentle operation of the bowels, will tend to correct the acidity: by which means it not only removes the disease, but obviates its cause. If necessary, it should be repeated the succeeding day, being far preferable to prepared chalk and such other medicines, which, although they correct the acidity, are apt to lodge in the bowels, and occasion costiveness.

A costive habit is, indeed, of itself, a frequent cause of flatulency and griping pains in infants; and, when it occurs, ought to be obviated by administering the above medicine. If not found sufficiently active, fifteen or twenty drops of the compound tincture of senna may be added. When the griping pains are very acute, warmth may also be applied externally to the stomach and bowels, by fomenting them with bitter herbs.

In infants who are brought up by the hand, it will be necessary to pay the strictest attention to their food, and carefully to observe what seems to agree best with them. Such infants are very apt to be troubled with acidity and flatulency in their stomach and bowels, and therefore it ought to be prepared fresh once or twice a day, and to have a few fennel-seeds (enclosed in a small bag) boiled up in whatever farinaceous substances are given to them as food. Where pap, arrow-root, or the like productions, do not seem to agree, the crumbs of bread, mashed very fine in a little chicken-broth or weak beef-tea, may be substituted occasionally.

SECTION IV.

GALLING AND EXCORIATION.

YOUNG children are very apt to become excoriated in particular parts of the body, especially about the groins, wrinkles of the neck, behind the ears, and under the arms—such places being kept much moistened by urine or sweat.

These complaints prove very troublesome to children, and are in some measure owing to a want of due cleanliness in the mother or nurse. To prevent them, and likewise to remove them when they do occur, it will be necessary to wash the parts well with cold water once or twice a day, to change the linen often, and keep the child perfectly clean and sweet. After the child is washed and dried, the parts affected may be sprinkled with a little fine elm-bark. Where the galling or excoriation is considerable, the parts, after having been washed with cold water, may be wetted with a linen rag moistened in equal parts of jamaica spirits and common water, and then be dressed with fine lint spread with elder-ointment.

SECTION V.

LOOSENESS, OR PURGING.

THIS complaint, as well as flatulency and gripes, often arises in children from the introduction of unwholesome food into the stomach, as well as the sudden disappearance of some cutaneous eruption of a critical nature; and infants who have been recently deprived of the breast are sometimes greatly disordered in their bowels by frequent, watery stools, attended with gripes, and occasionally by convulsions. When this happens, restoring the child to the breast of its former nurse, or that of another, should not be neglected, as the first necessary step to be taken. A little of the neutralizing physic or mixture will soon remove this complaint.

SECTION VI.

TEETHING, OR DENTITION.

ARBUTHNOT states that above a tenth part of infants die in teething, by symptoms proceeding from the irritation of the tender nervous parts of the jaws, occasioning inflammation, fever, convulsions, gangrenes, &c. These symptoms are in a considerable measure owing to the great delicacy and exquisite sensibility of the nervous system at this time of life, which is too often increased by an effeminate education: hence it comes to pass that children who are delicately brought up always suffer most in teething, and often fall by convulsive disorders.

About the sixth or seventh month, the teeth generally begin to make their appearance: first, the *incisors*, or fore-teeth; next, the *canini*, or dog-teeth; and, lastly, the *molares*, or grinders. About the seventh year, there comes a new set; and, about the twentieth, the two inner grinders, called *dentes sapientia*—the teeth of wisdom.

Children, about the time of cutting their teeth, slobber much, and have generally a looseness. When the teething is difficult, especially when the dog-teeth begin to make their way through the gums, the child has startings in its sleep, tumors of the gums, watchings, gripes, green stools, the thrush, fever, difficult breathing, and convulsions.

Difficult teething requires nearly the same treatment as an inflammatory disease. If the body be bound, it must be opened either by emollient clysters or gentle purgatives, as senna, manna, rhubarb, &c.

The food should be light, and in small quantity ; the drink plentiful, but weak and diluting, as infusions of balm, catnep-flowers, &c., to which about a third or fourth part of milk may be added.

Sydenham says that, in fevers occasioned by teething, he never found any remedy so effectual as two, three, or four drops of spirits of hartshorn in a spoonful of simple water or other convenient vehicle, given every four hours.

When children are cutting their teeth, a small strengthening-plaster may be placed between their shoulders : this generally eases the tickling cough which attends teething, and is by no means a useless application. When the teeth are cut with difficulty, it ought to be kept on during the whole time of teething. It may be enlarged as occasion requires, and ought to be renewed at least once a fortnight.

Several things have been recommended for rubbing the gums, as oils, mucilages, &c. ; but from these not much is to be expected. If anything of this kind is to be used, we would recommend a little fine honey, which may be rubbed on with the finger three or four times a day. Children at this time are generally disposed to chew whatever they get into their hands : for this reason they ought never to be without somewhat that will yield a little to the pressure of their gums.

With regard to cutting the gums, we have seldom known it of any great benefit. In obstinate cases, however, it ought to be tried. It may be performed by a penknife or lancet.

In order to render the teething less difficult, parents ought to take care that their children's food be light and wholesome, and that their nerves be braced by sufficient exercise.

Infants during dentition are subject to sudden attacks of spasm about the windpipe, producing a temporary feeling of suffocation, with a crowing sound : but there is no hoarse cough. It is apt to take place suddenly at night, or when crying. It is cured by giving a combination of tincture of bloodroot and lobelia, and by using laxatives ; the tepid bath is also useful. The gum may be cut ; and if there be any tendency to a return — particularly if the child be hot, the pulse quick, the eye heavy, and the face unusually pale, or flushed — purgatives should be given, the feet bathed, and garlic applied to them.

SECTION VII.

BOWEL COMPLAINTS GENERALLY.

A GREAT proportion of infants are cut off before they are a year old, from bowel complaints, particularly in populous cities ; and most of them arise from an unnatural (and I was about to say wicked) practice of such vast numbers of persons crowding together in small, filthy, and confined apartments or houses. In this city there are instances where a dozen families occupy one tenement ; and in Europe it is no doubt much worse. This alone is sufficient to account for most of the bowel and other complaints of infant children ; but when we add to this the great quantities of trash or green fruit they eat, can we wonder that so many are sent to an untimely grave ?

Children are always sickly in the fruit season, which may be thus accounted for : Two thirds of the fruit which comes to market in this country is really unripe ; and children, not being in a condition to judge for themselves, eat whatever they can lay their hands upon, which often proves little better than a poison to their tender bowels. Servants and others, who have the care of children, should be strictly forbidden to give them any fruit without the knowledge of their parents.

In all these complaints it must be recollected that prevention is better than cure. Their diet must be attended to : it should consist principally of milk, and at a suitable age it must be boiled with a little flour. No fruit should be given, except it be fresh and ripe. Their apartments, persons, and clothing, must be kept perfectly clean ; and it is of the highest importance that they be placed in pure air, and, if possible, in the country.

As soon as the bowels become disordered, the neutralizing cordial or mixture must be given. This

medicine will almost immediately remove the acidity of the stomach and pain in the bowels, change the appearance of the passages, and, in a word, cure the complaint.

Sometimes it may be necessary to give an infusion or tea of raspberry-leaves, bene plant, &c. ; foment the bowels also with bitter herbs.

SECTION VIII.

APTHÆ, THRUSH, OR CANKER, AND CONVULSIONS.

INFANTS and children are often affected with little sore spots or eruptions about the mouth, and it usually extends from the stomach to the end of the bowels, giving rise to many painful and unpleasant symptoms. This complaint arises from a morbid state of the stomach, and it must be treated by giving a gentle neutralizing physic. The mouth may be often washed with a decoction of sage and hyssop, sweetened with honey, with a little fine borax added.

CONVULSIONS.—When fits or convulsions arise from teething or any other cause, the feet must be immediately bathed in warm ley-water, and an anodyne must be administered, such as the syrup of poppy or paregoric.

Garlic should be bruised and applied to the stomach ; and if there be heat of the head, spirits, rain-water, and vinegar, may be applied. These means must be repeated as often as fits occur ; in obstinate cases it may be necessary to use a warm bath.

SECTION IX.

SORENESS OF THE NAVEL-STRING, RUPTURE, TONGUE-TIED, ETC.

ABOUT the time the umbilical cord separates, there is sometimes soreness and inflammation. For such symptoms, sprinkle with a powder of slippery-elm bark, and apply the black salve.

RUPTURE (HERNIA).—Sometimes, from crying, or other causes, infants are afflicted with ruptures. When this happens, the earliest attention is required.

The infant or child should be placed in a recumbent position, or on its back. Then press the tumor or protruded part back, make a compress of linen, which has been previously wet in a decoction of oak-bark, apply it over the rupture, and secure it by a bandage. If this fails to keep it in its proper situation, apply a truss.

TONGUE-TIED, OR DIVISION OF THE FRENUM LINGUÆ.—Sometimes the frenum of the tongue is so contracted, that the child can not nurse or suck. When this occurs (and only then), there must be a very slight incision made with a pair of scissors or lancet.

The cut must be very small and superficial, lest a blood-vessel be wounded. If the child can nurse, this practice must never be resorted to. In almost every case this is an imaginary complaint ; and when parents or a parent insists upon its being done, from a mistaken notion, the back of the lancet may be used, and this will satisfy them.

SECTION X.

IMPERFORATED VAGINA, CLUB-FEET, AND CHOKING.

SOMETIMES a thin membrane forms across the mouth of the vagina, which partially or wholly closes it. This is very easily divided by a lancet or pair of scissors.

CLUB, CROOKED, OR DEFORMED FEET.—When children are born with this deformity, an intelligent person informs me that a certain practitioner is always in the habit of immediately turning them at birth into a right position, and securing them with proper splints and bandages. This, he says, always obviates the deformity.

CHOKING.—Infants often become choked by getting various substances into their mouth and throat. When this accident occurs, let the child be placed upon the lap of the mother or nurse, and its head turned downward, while it is gently struck a few times on the back between the shoulders. If this does not immediately remove it, let the fore-finger be introduced and extract it. Should this fail, give a mild emetic.

SECTION XI.

VENEREAL DISEASE OF INFANTS.

It is now common in this corrupt age for infants to be born with the venereal disease, received in consequence of the licentious conduct of the parent or nurse, giving rise to ulcers in some parts of the body. I have known some children almost a mass of corruption from the venereal disease communicated in this manner. The poison, instead of affecting the mother during pregnancy, is communicated to the infant. When such a complaint occurs, the medicine must principally be given to the mother, instead of the child. The alterative syrup must be administered, which is made in the following manner: Take bloodroot (*sanguinaria Canadensis*); bark of the root of sumach (*rhus glabrum*); root of blue flag (*iris versicolor*); bruise the roots, and make a strong decoction. Let the patient drink freely. This makes a very purifying or alterative decoction; and some botanical physicians rely almost exclusively upon the blue flag for the cure of the venereal disease, while others depend almost entirely upon the mandrake.

Who can calculate the magnitude of the vices of men who entail such a loathsome and horrid disease upon their offspring? Why are crimes, which dwindle into insignificance compared with this, punished, while this is passed over without any penalty?

I have sometimes thought, from the prevalence of this vice, that half of the diseases of women and children were produced by it. Besides the miseries inflicted upon innocent children, what domestic broils and difficulties are the consequences!

The reader would be astonished if he knew how many young men are ruined by visiting houses of ill-fame. It either brings thousands to an untimely grave, or cripples or diseases them for life; and the only method to put down this disgraceful and destructive vice is, for the municipal authorities of every county wholly to exterminate every house of the kind, by employing officers who, instead of countenancing or visiting them, as is now the case, will faithfully and rigidly perform their duty. Not only so, but every female who has the least regard for virtue or morals should resolve never to associate with or show the least favor to any young man who is known or suspected of keeping the company of prostitutes. Nor should any person guilty of this vice be treated with respect until he reforms. Let him be viewed in the same light as a thief or a robber, and then we may expect to see a reformation. The vice must be stamped with public disgrace and infamy.

The Jews, by their laws, were in certain cases forbidden to have any manner of commerce with the diseased; and to this all wise legislators ought to have a special regard. In some countries diseased persons have actually been forbidden to marry. This is an evil of a complicated kind—a natural deformity, and a social mischief: and therefore requires a public consideration.

(For a full history and description of the venereal disease (*lues venerea*) or *syphilis*, with an account of the various remedies proposed under different modes of treatment, see my "American Practice," volume ii., pages 237–264.)

SECTION XII.

INOCULATION.

THE small-pox, says Townsend, so destructive to preceding generations, is now, under proper management, no more to be dreaded than fire on the hearth.

For this change we are indebted to inoculation, introduced at the commencement of the present century by Pylarini, an eminent practitioner of Italy, who being then resident at Constantinople, sent to the Royal Society the first account both of the operation and its effects on the inhabitants of that metropolis. By his relation, it appears that to them originally the practice had been derived from Greece, where it was found, not in the hands of physicians, but of the peasants.

And by a subsequent account, transmitted to the same society by Timoni, in the year 1713, it is evident that the Circassians and Georgians had been long in the habit of performing this kind of office for their female children, in order to preserve their beauty. Their principal intention was, however, to increase their value, when, at the age of maturity, they were sold to the Turkish officers.

In the year 1717, the son of Wortley Montague, then at Constantinople, was inoculated; and Lady Mary, on her return to England, introduced the practice, where it was first tried on the malefactors then in Newgate, under sentence of death. In consequence of the propitious issue of that essay, it was adopted by the royal family.

Dr. Jurin, physician to the court, having observed, so early as the year 1722, that, instead of one in five—the usual proportion lost by the natural small-pox—not more than one in ninety failed under inoculation, he communicated the information to the public, gave a description of his practice, and firmly established it.

When the matter of small-pox is inserted under the skin, a pimple appears on the third day, followed by swelling in the axilla. The pimple then becomes surrounded by a jagged areola, in which small vesications are observable. On the seventh, or, at farthest, the eighth day from the insertion of the virus, rigors occur, and in forty-eight hours afterward the eruption appears. In a large majority of cases, the eruption proves to be of the *mild* and *distinct* sort; and in very many instances the number of pustules over the whole body does not exceed one hundred. The further progress of the disorder differs in no respect from that of the distinct *casual* small-pox.

Nothing has ever been suggested calculated to throw the smallest light on the curious fact that the mode of reception into the system should thus influence the *quantity* of eruption. To so great a degree does this take place, that the mortality by inoculated small-pox, without any restriction as to age or strength of constitution, does not exceed one in five hundred. We select for the period of inoculation that season of the year, and that time of life, when inflammatory tendencies are least to be expected. It is sufficiently ascertained that beyond a few doses of a cooling aperient, no preparatory course of *medicine* is requisite. A spare vegetable diet, cool air, and subacid drinks, will contribute to render the disease mild and safe. Improper management may, of course, increase the amount of eruption, and with it the danger of the patient. Some attention, therefore, ought always to be paid to the treatment of inoculated small-pox; but the principles to be observed in regard to the distinct and confluent species are equally applicable in the present case, and will be sufficient, without further detail, for the guidance of the practitioner.

It has been estimated that, before the introduction of inoculation, *four hundred and fifty thousand* individuals died annually of small-pox in Europe!

SECTION XIII.

VACCINA, OR COW-POX.

It is about thirty-five or forty years since a treatise on this disease, from the pen of Dr. Jenner, was laid before the public, making it known therein that it had been discovered that those who had been infected by it were, in general, secured ever afterward from the infection of the small-pox; that it was a very mild disease in comparison with the latter, never having been found to prove fatal; and, moreover, that from its not being infectious but by inoculation alone, it might be introduced into a family without extending to others.

In many of the dairy countries, it had long ago, indeed, been observed, that cows were subject to an eruption on their teats and udders, which occasionally was communicated to the fingers and other parts of the hands of those who milked them, giving rise to a few ulcerations, accompanied by some degree of fever; and it had been noticed that those who had thus gone through the vaccine disease were never afterward attacked by the small-pox, either naturally or by inoculation. This knowledge had, however, never been improved, or acted upon, until Dr. Jenner's publication; and it is to him that mankind are indebted for the promulgation of this valuable discovery.

The pustules, on their first appearance, when the infection is received from the cow, somewhat resemble small vesications occasioned by a burn; these superficial suppurations assume a circular form, their edges being more elevated than the centre, and are of a bluish color; tumors, in consequence of the absorption of the morbid poison, appear in the arm-pits, with some affection of the system, such as slight shiverings, lassitude, a quick pulse, sickness at the stomach, vomiting, and occasionally delirium: these symptoms, however, generally go off in a few days, leaving the ulcers in a state unfriendly to healing.

It is now well ascertained, however, that the vaccine virus is rendered much milder by passing through different persons, than when received directly from the cow; and so gentle is the disease when it arises from inoculation, that the aid of medicine is seldom if ever necessary, either prior to the appearance of the pustules or during their continuance or suppurative stage; but as soon as the eschar on the arm where the vaccine matter was introduced begins to become dry, and the few pustules which had shown themselves to disappear, it may be advisable to give one or two doses of some gentle purgative, suffering three or four days to intervene between each dose.

The following circumstances are deserving of attention in inoculating for the cow-pox, and substituting this mild and safe disease for that dangerous and pestilential one, the small-pox:—

1. That the matter with which we inoculate be not taken later in the disease than the ninth day.
2. That the fluid be perfectly transparent, as it is not to be depended upon when it is in any degree become opaque.
3. That the matter taken should be allowed to dry gradually and thoroughly before it is laid by for use, when not employed immediately, or in its fluid state.
4. That the punctures with the besmeared lancet be done as superficially as possible, and only one be made in the same arm.

Here it may not be improper to remark that the inoculation for this disease will not be likely to succeed well if there be any herpetic eruption on the skin. On the third or fourth day after inoculation, the wound will appear a little prominent and red around its edges, which will keep increasing to about the ninth or tenth day, when the constitution will show some symptoms of being affected, such as a slight degree of febrile heat, and probably a little enlargement of the glands in the pit of the inoculated arm. Should any excess of inflammation happen to arise in the inoculated part, immediate attention should be paid to it.

It will be of the highest importance, after vaccine inoculation, to ascertain that the vesicle in the arm has not acted *locally*, but that it has effected the desired change in the constitution. With this view,

it may be advisable to revaccinate at some after period, to test the security from any exposure hereafter to variolous infection. If parents will not be satisfied with this test, matter taken from a small-pox pustule may then be substituted instead of the vaccine. In one instance out of ten thousand, perhaps, small-pox may take place after the constitution has been satisfactorily acted upon by vaccine inoculation, and even when this has happened, the disease has usually been very mild indeed.

Some persons have been known to have the small-pox a second time, and this irregularity may perhaps account for a few of the cases of small-pox which have occurred after vaccine inoculation. The majority of such cases may, however, justly be attributed to imperfect or improper vaccine matter having been employed for the inoculation, and which had not the power of securing the person so inoculated from the contagion of the small-pox. This spurious sort of vaccine matter is wholly inefficacious.

We have only to take a comparative view of the effects of the inoculated cow-pox, the natural small-pox, and the inoculated small-pox, to be fully satisfied of the decided preference to which the former is entitled.

The inoculated cow-pox is uniformly a mild and inoffensive disease: it is neither loathsome nor attended with any danger; in general, it forms no eruption, except a pustule or two on the inoculated part; requires neither confinement, loss of time, nor expense, as few or no medicines are necessary; it occasions no subsequent disfiguration; induces no supervenient disease; and, lastly, is not contagious, and may therefore be introduced into any family without its extending to others.

It is well known that the natural small-pox is frequently a painful, loathsome, and fatal disease, and that, from a computation, one person in six falls a martyr to it. It is of a highly contagious nature, and spreads rapidly; the eruptions are painful, numerous, and disgusting in their appearance, and leave behind deep scars, or pits, especially in the face; it requires some weeks' confinement, loss of time, and more or less expense, as medical treatment and attendance are requisite, both during the continuance of the disease and afterward; and when it ceases, it is apt to induce inflammation of the eyes, deafness, diseases of the skin, glands, and joints, and to bring into action scrofula, which is dormant in the constitution.

"It is not known," says Eberle, "at what period the small-pox made its first appearance. In the writings of the Greek and Roman physicians we find nothing which could lead us to believe that they had any particular knowledge of this devastating malady, although we can scarcely doubt that its origin was of a much earlier date. The Arabian physicians were the first who gave a distinct description of this disease; and it is to the small work of Rhazes, who lived about the beginning of the tenth century, that we must look for an account of its early history. It may be collected, from the writings of Rhazes and others, that small-pox was probably at first brought from Ethiopia into Arabia, and that it was thence conveyed into the Levant, Spain, and Sicily, by the Saracens, during their hostile irruptions into these countries. In the eleventh and twelfth centuries, it gained vast ground during the wars waged by the Christian potentates against the infidel Saracens for the recovery of the Holy Land. From that time forward, its desolating visitations were frequently renewed in every part of Europe: and there is perhaps no single disease, with which the Almighty has thought it good to afflict mankind, which has carried off so many victims to the grave as the present one."

The inoculated small-pox is generally mild, but in some instances is attended with all the violence, disgusting appearances, and danger, of the natural. Of those who are inoculated, it has been computed that one out of three hundred is destroyed, and that one in forty has the disease in a dangerous form. Eruptions more or less numerous are scattered over the body, and the disease requires preparation by diet and medicine before the appearance of the eruptions, as well as confinement, loss of time, and expense, during its different stages. It is, moreover, as contagious as the natural small-pox, and, where it proves severe, is apt to leave deep pits or scars behind it, as well as to call into action other diseases, particularly scrofula. Besides these disadvantages, it can not be practised with safety in early infancy, or old age, or during a state of pregnancy; whereas, vaccine inoculation is subject to no such restrictions and inconveniences. — THOMAS.

In many instances, as has been already stated, vaccination protects the system *completely* against infec-

tion from small-pox contagion. In other cases, the system is either only partially freed from its aptitude to variolous infection, or this susceptibility, though for a time entirely subdued by the vaccine influence, gradually returns and regains a greater or less degree of intensity. The disease which results from the action of small-pox contagion on a system thus partially deprived of its variolous susceptibility, and which has of late years been so common, deviates more or less conspicuously from regular small-pox, and is, in a great measure, divested of the dangerous character of the latter affection.

A variety of opinions have been entertained respecting the effect of true small-pox on the *foetus* in utero : a sufficient number of instances, however, have been recorded, to ascertain that the disease may be communicated from the mother to the child. In some cases the body of the child at its birth has been covered with pustules ; and the nature of the disease has been most satisfactorily ascertained by inoculating with matter taken from these pustules. In other cases there has been no appearance of the disease at the time of the birth ; but an eruption and other symptoms of the malady have appeared so early, as to indicate that the infection must have been received previously to the removal of the child from the uterus.

SECTION XIV.

CHICKEN OR SWINE POX.

SYMPTOMS.—The eruptions make their appearance, in many instances, without any previous illness ; in others, they are preceded by a slight degree of chilliness, lassitude, cough, interrupted sleep, wandering pains, loss of appetite, and a febrile disposition for three or four days. Most of the eruptions are of the common size of those of the small-pox, but they are not numerous or confluent. On the first day they are red, and much resemble in their appearance the small-pox. On the second day, the red pimples have become small vesicles, containing a colorless fluid, but sometimes a yellowish liquor. On the third, the pustules arrive at full maturity, and in some instances so much resemble the small-pox as to be distinguished with difficulty. When the little bladder is broken by accident or rubbing, as sometimes happens on the first or second day, there forms a thin scab, and the swelling of the other part abates without its ever being converted into proper matter, as it is in the small-pox ; the few which escape being burst, have the little drop of fluid contained in the vesicle at the top of them, turn yellow and thick, and it dries into a scab. On the fifth day of the eruption, the pustules are almost dried, and covered with a slight crust, but no cicatrix or mark is left behind when this falls off.

DIAGNOSIS.—The only disease for which the one under consideration can be mistaken is, the small-pox of the mildest and most distinct kind ; but the former may readily be distinguished from the latter, by the small degree of fever, by the eruption being generally first visible in the back, each vesicle being filled with a limpid fluid on the second or third day, and crusts covering the pocks on the fifth day, at which time those of the small-pox are not at the height of their suppuration.

It is proper to remark here that the pocks are occasionally so large, and come to such maturity, as to be mistaken for the small-pox ; and inoculators have been so unwary as to take matter from them, whereby some have been supposed to have taken the true small-pox a second time, and others have fallen a sacrifice to the disease, under the fatal idea of their being secure.

The chicken-pox is perfectly free from danger, unless the eruption be of the confluent kind—a rare occurrence indeed—when it is to be appreciated from the degree of violence in the accompanying fever.

TREATMENT AND REGIMEN.—The complaint is usually of so trivial a nature, as seldom to require the aid of medicine ; but should the febrile symptoms run high previous to the appearance of the eruption, or after it has shown itself, it may be advisable to give the patient some cooling medicine from time to time—drinking plentifully of cool, diluting liquors, and keeping the bowels open, if necessary, by some gentle aperient medicine. After the disappearance of the eruption, one or two doses of any mild purgative had better be administered, with an interval of three or four days between each.

SECTION XV.

RUBEOLA, OR MEASLES.

DESCRIPTION.—The measles are known by the appearance of small eruptions, somewhat resembling flea-bites, over the face and body, but particularly about the neck and breast, not tending to suppuration. Many of these spots soon run into each other, and form red streaks or suffusions, larger or smaller; which give the skin an inflammatory appearance, and produce a perceptible swelling of the face; each spot is raised a little above the surface, especially in the face, where they are manifest to the touch: in the limbs and trunk they form only a roughness.

The disease is highly infectious; it often prevails epidemically, however; and the constitution that has been once under its influence is seldom liable to a second attack: it only happens when the person has at first had a very mild or spurious species of measles.

CAUSES.—The measles are produced by a specific infection, or contagious matter received into the constitution, if this is predisposed to favor the progress of such matter, and produces febrile effects in the habit: for if such a predisposition be wanting at the time that this disease or any other of a similar nature is epidemical, the effects peculiar to infectious or contagious matter can not be produced. Children are more liable to the measles than grown people, and the winter is the season of the year when the disease is most apt to be prevalent.

SYMPTOMS.—The symptoms which characterize measles and distinguish it from other eruptive disorders are, the dry cough and hoarseness, the heaviness of the head and drowsiness, the appearance of the eyes, which are red, swelled, itchy, very sensible to light, and frequently beset with tears, together with frequent sneezing, and an acrid thin discharge from the nostrils.

The measles may prevail at all seasons of the year as an epidemic, but the middle of winter is the time they are usually the most prevalent; and they attack persons of all ages, but children are most liable to them. They prove most unfavorable to such as are of a plethoric or scrofulous habit. Like the small-pox, they never affect persons but once in their life: their contagion appears to be of a specific nature. The eruption is usually preceded by a general uneasiness, chilliness, shivering, and pain in the head, in grown persons; but in children, by a heaviness and soreness of the throat, sickness, and vomiting, with other affections, such as happen in most fevers. But the chief characteristic symptoms are, a heaviness about the eyes, with swelling, inflammation, a defluxion of sharp tears, and great acuteness of sensation, so that they can not bear the light without pain, together with a discharge of much serous humor from the nostrils, which produces sneezing. The heat and other febrile symptoms increase very rapidly, to which succeeds a frequent and dry cough, a stuffing, great oppression, and oftentimes retching to vomit, with violent pains in the loins, and sometimes a looseness; at other times there is great sweating, the tongue foul and white, the thirst very great, and, in general, the fever runs much higher than in the milder sort of the regular small-pox. The eruptions appear about the fourth or fifth day, and sometimes about the end of the third. On the third or fourth day from their first appearance the redness diminishes, the spots (or very small papulæ) dry up, the cuticle peels off, and is replaced by a new one. The symptoms do not go off on the eruption, as in the small-pox, except the vomiting: the cough and headache continue, with the weakness and defluxion of the eyes, and a considerable degree of fever. On the ninth or eleventh day, no trace of redness is to be found, but the skin assumes its wonted appearance: yet, without there having been some considerable evacuations, either by the skin or by vomiting, the patient will hardly recover strength, but the cough will continue, the fever return with new violence, and bring on great distress and danger.

In the more alarming cases, spasms of the limbs, lethargy, delirium, or, what more frequently happens, twitching of the tendons, supervene. This last symptom so frequently attends the eruptive fever of measles, that by some practitioners it is regarded as one of its diagnostics. In measles, as in other febrile

diseases, the symptoms generally suffer some remission toward the morning : returning, however, toward the evening, with increased severity.

The measles, when violent, are not usually attended with a putrid tendency ; but it sometimes happens that such a disposition prevails, both in the course of the disease and at its termination. In such cases, livid or black spots are to be observed interspersed among the eruptions, and these last become livid, or assume almost a black color. Hæmorrhages break out from different parts of the body, the pulse becomes frequent, feeble, and perhaps irregular, universal debility ensues, and the patient is destroyed.

PROGNOSIS.—We are to regard in a favorable light the febrile and other symptoms being mild, a gentle moisture diffused equally over the whole body on the coming out of the eruptions, early and free expectoration, and open bowels. On the contrary, the fever increasing after the appearance of the eruptions, great pain in the head and eyes, anxious respiration, no expectoration before the fourth day, an inflammatory affection of the lungs, a small but rapid pulse, delirium, the sudden disappearance of the eruptions, or these becoming of a livid hue, violent purging, great loss of strength, purple spots on different parts of the body, with other marks of putrescency, are very unfavorable symptoms : indeed, the latter clearly point out that a fatal termination is near at hand.

A disposition to consumption, attended by hectic fever, and an obstinate inflammation of the eyes, are not unfrequently observed after measles have gone off, and ought therefore to be carefully guarded against.

DISSECTION.—The morbid appearances to be observed on dissection of those who die of measles are pretty much confined to the lungs and intestines, the former of which always show strong marks of inflammation, and sometimes a tendency to mortification. Where the patient dies under the eruption, the trachea and larger branches of the bronchia, as in the small-pox, are often covered with it, which may account for the increase of the cough after the disappearance of the eruption.

DISCRIMINATION.—Scarlatina sometimes resembles the measles so exactly as not to be easily distinguishable. The redness of the scarlet fever is more equally diffused than in the measles, and is not in distinct spots with the natural color of the skin interposed : yet in a few it has been observed so. In the measles, the eruption rises more above the skin, and occasions a manifest roughness to the touch, which is hardly observable in the scarlet fever, except a very little roughness sometimes in the arms. In the scarlet fever, there is seldom a severe cough, the eyes do not water much, and the eyelids are not red and swollen ; all which rarely fail to attend the measles. The time of the eruptions is likewise different : for it appears in the scarlet fever both in the face and arms on the second day ; but in the measles it begins only about the third day to be visible on the chin and breast, and does not come to the arms and hands till the fourth or fifth day.

COMMON PRACTICE.—Bleeding, blistering, antimony, calomel, laudanum, nitre, muriate of ammonia or squills, ice-water, and other cold applications.

REFORMED PRACTICE.—*Indications of cure* : 1. It is our duty in this disease, as well as in small-pox, to assist nature in expelling the eruption, if her efforts be too feeble ; and when they are too violent, they must be moderated by suitable evacuations.

2. The attention must be directed to urgent and particular symptoms, such as cough, restlessness, difficulty of breathing, &c.

The greatest danger in the treatment of measles, as well as in most other diseases, consists in doing too much by improper and untimely interference, and thus taking the business out of the hands of nature, and trusting it to the danger and uncertainty of art. The measles being usually attended with great inflammation, it is often the first business of the physician to moderate it. The first step to be taken will be, to immerse the feet in warm ley-water, and bathe the surface with the same once or twice a day, according to the urgency of the symptoms, until the eruptions appear ; this will relieve the head, and facilitate the appearance of the eruptions. The following infusion should be given as early as possible :—

Take saffron.....two parts ;
Virginia snakeroot.....one part.

Make a tea, sweeten with loaf-sugar, and give warm: to be repeated, and as much drunk as the stomach will bear. This infusion, with the means before recommended, will lessen the distressing and urgent symptoms attendant on the forming stage, by diminishing excessive inflammation, as well as aid the expulsion of the eruptions.

If, from debility, cold, or any other cause, the eruptions should only partially appear—or, after their appearance, should there be a recession of them—in addition to these means, give sudorific drops, warm milk-punch, &c., and should this not be sufficient, use the warm bath. When they have made their appearance on the surface, and assume a healthy appearance, very little medicine is necessary. In this complaint the eyes are generally very much affected; when this is the case, they may be washed with the mucilage of slippery-elm bark and borax-water.

There are also pneumonie or pulmonary symptoms in measles, which prove very distressing to the patient. When there is difficulty of respiration, from the accumulation of mucus, give a dose of the tincture of lobelia sufficient to dislodge it, to be repeated on the return of the symptoms; in addition to which give the following:—

Take pleurisy-root (*asclepias tuberosa*);
horehound (*marrub. vulgar*): equal parts.

Add sufficient boiling water to make a strong infusion; sweeten with honey. Let this be freely given. Should the pain of the head be very great, with delirium or convulsions, continue to bathe the feet often, and apply to them the *mustard-paste*.

There is usually considerable febrile excitement, restlessness, and pain. For these symptoms, as well as to keep up a continual moisture of the skin, give a dose (according to the age of the person) of the diaphoretic powders every night at bedtime. Should nausea or vomiting prevail, let mint-tea and bicarbonate of potash be given.

It is of the greatest consequence in measles to attend to the bowels. In the first stages of this disease a purgative should be given, and repeated according to the violence of the disease and inflammation. If the excitement is very great, a moderate dose of physic may be given every day; but in general every two or three days will be sufficient, till the eruptions have fully appeared, when it may be necessary to repeat them oftener, in order to prevent any morbid matter which may have been retained in the system from being thrown upon some organ, and thus causing subsequent diseases, such as chronic ophthalmia, dropsy, consumption, &c. The following purgative, under these circumstances, may be given:—

Take senna,
manna,
cream of tartar.

Of the first two articles, take two drachms of each; add half a pint of boiling water; simmer until the strength is extracted; then add a teaspoonful of cream of tartar: sweeten. For a child of two years old, give a tablespoonful every two hours until it acts upon the bowels. This purgative may be occasionally repeated.

Should any disease remain after the measles have disappeared, let it be treated the same as arising from other causes. If great debility of the system should take place, denoting a tendency to putrescency, give yeast mixed with a little sweet-oil and molasses three or four times a day. Give also wine-sling or sangaree, warm, with plenty of nutmeg grated into it.

REGIMEN.—Panado, gruel, ripe fruits, currant-jelly, &c., may be taken. The patient may also drink barley-water, toast-water, buttermilk-whey, &c. The room should be well ventilated, clean, and of a moderate temperature, and the clothes should be often changed. Patients recovering from the measles should be careful about their diet. Their food for some time ought to be light, and in small quantities, their drink cooling, and rather of an opening nature.

This treatment will carry the patient safe through the disease; while the opposite course (bleeding, mercury, &c.), will cause such debility or putrescency in the fluids, as to protract the complaint, harass and distress the patient, if not prove fatal.

DISEASES OF WOMEN AND CHILDREN.

SECTION XVI.

SCARLATINA, OR SCARLET FEVER.

DESCRIPTION. — The *scarlet fever* is so denominated from the scarlet color and eruptions which appear on the body. It occurs at all seasons of the year, but generally in the fall, or beginning of winter; it often seizes whole families, but children and young persons are more subject to it. It is divided into three principal kinds: simple *scarlatina*, when the throat is not affected; *scarlatina anginosa*, when the throat is affected; and, when accompanied with symptoms of putrescency and malignancy, it is called *scarlatina maligna*. The two latter kinds are generally blended together. There has been a dispute whether the scarlet fever and malignant sore throat are the same diseases, or only a variety of the same. "It is now pretty generally admitted," says a writer, "that the scarlet fever in all its forms, as well as putrid sore throat (*cynanche maligna*) is produced by the same specific contagion."

CAUSES. — Scarlet fever arises from a specific contagious effluvia. This disease is seldom, if ever, taken the second time. There are some instances on record of the fact that, in this type of fever, as in many others, individuals are rendered unsusceptible of its contagion.

Gregory states that there is abundant evidence that fever attended with scarlet eruption, and possessing all the other characters of this disease, does occasionally arise from exposure to cold. The cause or contagion of scarlet fever will remain in one place for several years, a few individuals becoming from time to time affected with it.

"This disease," says Thatcher, "has long been considered as highly contagious, spreading epidemically through villages and districts, with an alarming degree of mortality. In the years 1735 and '36 it prevailed extensively throughout our country in its most malignant form, and it was estimated that in Massachusetts about one thousand persons became its victims.* It is recorded that in 1741, '46, and '60, the disease termed *anginosa maligna*, or the putrid and ulcerated sore throat, prevailed and extended through the colonies with mortal rage, in opposition to the united endeavors of the faculty. It swept all before it, and some villages were almost depopulated. It appeared again in 1784, and spread through the New-England states; at subsequent periods it has been recognised either as an epidemic, or as sporadic cases, without assuming in a high degree characteristic contagious powers. Scarlatina, in all its forms, is produced by the same specific contagion; and frequently the symptoms are so blended in the first onset, that the particular species can scarcely be designated. It may be communicated by the contaminated atmosphere, and by simple contact of the patient, either in the heat of summer or cold of winter; but it most frequently occurs in autumn, and becomes a very prevalent epidemic, often continuing through the summer months. It frequently attacks young people in the most sequestered situation, where communication with the sick had been impossible, appearing in some families and passing others contiguous situated. It produces its operation on the system about the fourth or fifth day after exposure to the contagion, and it not unfrequently happens that persons exposed escape the disease; as in other contagions, although in general persons are not susceptible of a second attack, some instances to the contrary have undoubtedly occurred. Children and persons of weak lax habit are most commonly the subjects of this disease. In its mildest form it is known as the *simple scarlet fever*, receiving its name from the singular color which pervades the skin, resembling the shell of a boiled lobster, or appearing as if diffused with red wine."

SYMPTOMS. — The scarlet fever commences with a chill and shivering, like other kinds of fever, with nausea and often vomiting, great sickness, succeeded by heat, thirst, and headache: sometimes in a very

* Dr. William Douglas, a respectable physician of Boston at that day, published a valuable practical essay on the *anginosa ulcusculosa* which prevailed in New England in 1735 and '36, in which he detailed the characteristics of the disease, and the method of treatment. He says: "Most of those who died of the physician, died by immoderate evacuations." It has been related, by tradition, that the physicians of that day, or of some other period, adopted the plan of bleeding from the vein under the tongue; and although in almost all instances it proved fatal, the practice was persisted in longer than could have been deemed warrantable.

mild degree, at others more violent. The pulse is accelerated, the breathing is frequent or interrupted, the eyes red, and eyelids swollen. In two or three days the flesh begins to swell, a pricking sensation is experienced, and an eruption appears on the body in the form of a red stain or blotch, or rather of a *fiery redness*. It usually appears first upon the face, breast, and arms, then over the whole body, of a uniform red color. In about three days a gentle perspiration takes place, the efflorescence or eruptions disappear, the cuticle peels off, and there remains a kind of branny scales dispersed over the whole body, which sometimes reappear two or three times.

The scarlet fever may be distinguished from the measles, by the eruptions of the former (*scarlatina*) being more of a fiery redness, and diffused over the whole body, and not, as in measles, in distinct spots; nor is it accompanied with any cough, or a weeping or watering of the eyes; and the efflorescence of the measles does not appear till about two days later than the scarlet fever. Where the disease appears in the simplest form, there is little required from art: a simple course of treatment soon removes it.

SCARLATINA ANGINOSA (affecting the throat).—*Scarlatina anginosa*, in some instances, approaches very near to the malignant form. The patient is seized not only with a coldness and shivering, but likewise with great languor, debility, and sickness, succeeded by heat, nausea, vomiting of bilious matter, soreness of the throat, inflammation and ulceration in the tonsils, &c., a frequent and laborious breathing, and a quick and small, depressed pulse. When the efflorescence appears, which is usually on the third day, it brings no relief: on the contrary, the existing symptoms are much aggravated, and fresh ones arise.

In the progress of the disease, one universal redness, unattended, however, by any pustular eruption, pervades the face, body, and limbs, which parts appear somewhat swollen; the eyes and nostrils partake likewise more or less of the redness, and, in proportion as the former have an inflamed appearance, so does the tendency to delirium prevail.

On the first attack, the fauces are often much inflamed; but this is usually soon succeeded by grayish sloughs, which give the parts a speckled appearance, and render the breath more or less fetid. The patient is often cut off in a few days; and even if he recover, it will be by slow degrees: dropsical swellings or tumors of the parotid and other glands, slowly suppurating, being very apt to follow.

“The patient,” says an author, “complains of a stiffness in the neck, with acute pain in the back of the head. The throat is sore and inflamed, exhibiting a shining redness of a deeper color than in common inflammatory sore-throat, and interspersed with pale or ash-colored spots. In many cases, the affection of the throat is among the first symptoms, a dark-red line extending along the *velum pendulum palati*, and lower part of the *uvula*. The breath is highly offensive, the tongue is covered with a yellow mucus or thick brown fur, and the inside of the lips is beset with vesicles containing an acrid matter, which excoriates the corners of the mouth and other parts. In the progress of the disease, the inside of the nose becomes red and inflamed, and a thin acrid matter issues from the nostrils which corrodes the skin wherever applied.”

SCARLATINA MALIGNA (Malignant Species).—“This,” says Dr. Thatcher, “is the *cynanche maligna* of Cullen, the ulcerated or putrid sore-throat of Huxham and other authors.” This form of the disease has several symptoms in common with *scarlatina anginosa*: it comes on with rigors, dejection of spirits, pain in the head and back, giddiness, vomiting, and much general oppression. The eruption comes out in blotches, or small points scattered over the body and extremities, of a dark, purplish, or livid hue; the fever is intense, and progresses with rapidity, but manifesting an exacerbation in the evening and slight remission in the morning; the pulse is small, indistinct, and irregular; there is very great determination of blood to the brain, producing redness of the eyes, intolerance of light, throbbing, pain of the head, and delirium or coma; the whole neck sometimes swells and assumes a dark-red color. It sometimes happens that *cynanche maligna* appears without any affection or efflorescence of the skin, as *scarlatina* in some cases presents itself without any ulceration of the throat. As the sloughs about the fauces spread, they generally become of a darker color; the whole internal fauces are at length covered with thick sloughs, which, when they fall off, discover ulcers very deeply seated: the parts appear quite

black, and the sloughs often extend throughout the whole of the alimentary canal. The eruption sometimes suddenly recedes, and an alarming train of symptoms ensues, as also when the eruption suddenly assumes a very pale and livid appearance.

The symptoms called putrid and malignant are now conspicuous: a disordered state of the blood is indicated by inky petechiæ, oozings of black gore from the nostrils, gangrenous appearances of the throat, spots upon the skin, and hæmorrhages from various parts of the body. Cynanche maligna generally arrives at its height about the fifth or sixth day, but in some fatal cases the scene closes as early as on the third day. The inflammation, as in cynanche tonsillaris, on some occasions affects the *eustachian tube*, producing ulceration in the internal ear, and often extending to the parotid, maxillary, and other glands of the fauces, which become swelled and painful.

The malignant or putrid sore-throat may be distinguished from the inflammatory, by the looseness and vomiting, the puffy and dark-colored redness attending the swelling, and by the fetid ulcers of the throat, covered with white or ash-colored sloughs. It may also be distinguished by the slight delirium appearing early in the disease, and by the sudden weakness with which the patient is seized.

COMMON TREATMENT.—Mercury, bleeding, antimony, &c.

REFORMED PRACTICE.—*Indications of Cure.*—From the appearance of the eruptions on the skin, soon after the commencement of the disease, it is very evident that this fever is produced by some morbid matter taken into the circulation through the medium of the lungs, and that the increased action in the system is a healthy effort of nature to throw off such humors or morbid matter. It is therefore our duty to aid nature in her salutary efforts: if unable to expel the irritating cause from the system, she must be assisted by sudorifics, or sweating medicine; if her struggles are too great, by which much inflammation is produced, she must then be restrained or moderated.

Emetics.—Emetics will be found very useful in the commencement of the fever. None will have a better effect than pulverized ipecacuanha and lobelia given in suitable doses, according to the age of the patient. It is not always necessary, however, to give them; but if there is soreness of the throat, and an accumulation of mucus impeding respiration, a mild emetic will have a beneficial effect. When given in the forming stage of the disease, or at a very early period, they abate the febrile symptoms, render the subsequent effects of the fever less violent, and in some cases cure the disease or render it extremely light. Withering recommends them throughout the whole course of the fever. But the best effects arise from their use in the early stages of it. One great effect derived from emetics in febrile diseases is, the sympathetic action they exert upon the capillary system. The connexion which exists between the stomach and skin is so great, that if a healthy action is exerted upon the one, the other experiences a correspondent good effect. They appear to overcome that tension and stricture which exist in the pores of the skin, by their stimulating effects upon the cutaneous exhalents.

Purgatives.—Purgatives in this fever, as well as in others, are highly useful. Hamilton on purgative medicines speaks of their utility in scarlet fever in the highest terms: they moderate arterial action, relieve the pain in the head, prevent delirium, and remove the morbid state of the liver, stomach, and whole alimentary canal. It must be borne in mind, however, that there is a great difference in purgatives: some pass through the stomach and bowels without carrying away or removing any feculent matter, or altering the condition of the mucous membrane. In general, castor-oil and salts may be mentioned among this class of purgatives.

No kind will be found so useful as the *common purgative*: a teaspoonful of this powder to be put in a teacup or tumbler, with a lump of sugar sufficient to sweeten, then add a gill of boiling water or mint-tea. An adult will take the whole of it when cool; but it should be recollected that children, among whom scarlatina generally prevails, must take a dose proportioned to their age. This thoroughly cleanses the stomach and bowels, and invariably benefits the patient. It may be repeated every other morning, or, at farthest, every third morning.

“I think,” says an old and experienced physician, “the opinion gains ground that purgatives are useful in scarlatina. Many years ago, when the prejudices against them were more prevalent than they

are at this time, I ventured to employ them. My doing so was, indeed, a necessary consequence of the benefit I had experienced from purgative medicines in typhus. I had learned that the symptoms of debility which take place in typhus fever, so far from being increased, were obviously relieved by the evacuation of the bowels. I was therefore under little apprehension from them in scarlatina; and I have never, in a long course of experience, witnessed sinking and fainting, as mentioned by some authors, and so much dreaded by them; neither have I observed revulsion from the surface of the body, and consequent premature fading, or, in common language, 'striking in' of the efflorescence, from the exhibition of purgatives. Accordingly, in treating scarlatina, I have confided much in the use of purgative medicines; and no variety of the disease, as appearing in different epidemics, or in the course of the same epidemic, has hitherto prevented me from following out this practice to the extent which I have found necessary.

"I have observed the pungent heat of surface, violent headache, turgescence of features, flushing of countenance, and full and quick pulse, the earliest symptoms in some epidemics of scarlatina, and which may have suggested and warranted the practice of blood-letting, to be quickly subdued by one or two brisk purgatives. Full purging is not required in the subsequent periods of the disease, in which the sole object is to remedy the impaired action of the intestines, to secure the complete and regular expulsion of their contents, and thus to prevent the accumulation of *fæces*, which never fails to aggravate the symptoms, and to prove the source of further suffering to the patient.

"It is generally admitted, I believe, that purgative medicines are useful in removing dropsical swellings, the consequence of scarlatina, and are given with this view toward the decline of the disease, when the weakness of the patient is often very great. I conceive that purgatives also afford a means of preventing this swelling, and other derangements of health; and for this reason I give purgatives during the fever, when the strength is not altogether broke down, and for some time after convalescence has commenced.

"In scarlatina, as in typhus, we should keep in view the procuring the effect of purgatives during the day, and the avoiding, in this manner, the disturbance of the sick in the night-time. It is of moment to examine the *fæces*, to ascertain their state and quantity, circumstances necessary to determine the subsequent dose of the purgative, and the frequency of its exhibition.

"The use of purgative medicines in scarlatina does not supersede the other sources of relief and comfort which have been found proper in the treatment of the disease, and which our patients, or their friends and attendants, may expect, and which the habits of practitioners may suggest. Upon a dispassionate review, however, of the whole of the present inquiry, I feel myself at liberty to say, that, under the regulated exhibition of purgative medicines, conjoined with personal cleanliness, and access to pure air, I have not found the necessity of employing other remedies to be great, and certainly not so urgent as I at one time thought it to be."

Sudorifics.—Since the mischief exists in the capillary vessels, or the skin, the exhalents not performing their offices, such medicines must be given as will open the pores and cause perspiration. In this state of the system there are two difficulties: first, obstructed perspiration, by which the poison is retained in the system; and, second, the want of perspirable matter, by which the process of evaporation is carried on, keeping the skin moist and cool. Hence it is necessary to give sudorifics to promote the excretions of the skin.

In the first stages of scarlet fever, the feet must be bathed, and an infusion or tea of saffron freely given; also a teaspoonful of the sudorific or sweating drops, added to a tumbler of catnep-tea, to be repeated every two hours, until moderate perspiration follows. The same dose may afterward be given in the same manner, three or four times through the day, to keep up a determination to the surface, except the temperature of the body is too great to admit of this stimulating diaphoretic medicine, which is very seldom the case, especially if every other excretion of the body has been duly attended to. Should this be the case, however, we must rely on those medicines which produce perspiration without increasing the heat of the body, such as an infusion of catnep, aramanthus, &c., which may be taken warm, and drunk

freely through the day. An infusion or tea made of lemon-balm, or sage, may likewise be given as a change.

Bathing the Surface.—Cold affusions have been highly extolled by some authors, as well as cold drinks. I grant that cold water may often be applied to the surface with impunity, and often with benefit even in the different forms of scarlet fever; but injury may arise from its indiscriminate use. The subsequent effects arising from the repeated and sudden applications of cold to the body, under a great state of excitement, especially in an eruptive disease like scarlatina, may prevent the appearance of the eruption, and cause a recession of them after they have appeared, and thus prove fatal. Bathing the surface with warm rain-water, to which has been added a little ley, is far preferable. No dangerous reaction takes place from the use of tepid, as from cold water; nor will any danger result from it whatever, as it is a most valuable auxiliary, and the use of it can not be too strongly recommended. We may say, with Bateman, when speaking of the application of cold water—"We are possessed of no physical agent, so far as my experience has taught me, by which the functions of the animal economy are-controlled with so much certainty, safety, and promptitude, as by the application of cold water to the skin, under the augmented heat of scarlatina and of some other fevers. This expedient combines in itself all the medicinal properties which are indicated in this state of disease, and which we should scarcely expect it to possess, for it is not only the most effectual febrifuge, the '*febrifugum magnum*,' as a reverend author (Dr. Hancoke) long ago called it, but it is in fact the only sudorific or anodyne which will not disappoint the expectation of the practitioner under these circumstances. I have had the satisfaction, in numerous instances, of witnessing the immediate improvement of the symptoms, and the rapid change in the countenance of the patient, produced by washing the skin. Invariably in the course of a few minutes the pulse has been diminished in frequency, the thirst abated, the tongue has become moist, a general free perspiration has broken forth, the skin has become soft and cool, and the eyes have brightened; and these indications of relief have been speedily followed by a calm and refreshing sleep."

It may be applied as often as the fever increases; but should be omitted if there is any chill, or if the skin is not above the natural temperature: it may then, however, be applied very warm.

When the throat is sore and the swallowing difficult, which often occurs in the scarlet fever, it must be bathed with the following liniment or oil:—

Take spirits of turpentine,
oil of sassafras,
olive or sweet oil,
spirits of hartshorn,
gum-camphor. Equal parts. Mix.

Apply warm, after which bind a flannel around the neck. The throat may be gargled, if it can be conveniently done, with the following:—

Take sage,
hyssop. Equal parts.

Make a strong tea or decoction, sweeten with honey, add a small piece of borax, and gargle often.

Mustard-plasters, made weak, may be applied to the feet. I have always seen the happiest effects also from anodynes, combined with diaphoretics.

Our diaphoretic powders are attended with very excellent effects. They tranquillize the system, mitigate pain, procure sleep, lessen the fever by causing perspiration, and will have the desired effect in every and any stage of the complaint, particularly after the evacuants recommended have been made.

When there is some inflammation of the brain present, Eberle, among other means, recommends bleeding; but there is much more danger to be apprehended from bleeding than there is from the inflammation, even without any means made use of to lessen it. There is great debility present in this as well as in other kinds of fever, and therefore common sense shows that, whatever tends to augment this debility or prostration, must tend also to hasten its fatal termination. Bleeding in this, as well as in other fevers, almost inevitably precipitates the patient into fatal prostration. I know of nothing more

unnatural or absurd than to plunge a lancet into the arm of the little sufferer, under pretence of reducing the inflammation or fever.

When there are symptoms of inflammation of the brain present, bathing the feet, and applying tepid water or cooling lotions to the head, such as a mixture of water, vinegar, and brandy, with frequently bathing the feet and applying sinapisms, will do more to allay it, than drawing any quantity of blood from the system. If no other means would subdue it, leeches or cupping might be resorted to : but I have never found either necessary in all my practice.

Some apply blisters under such circumstances, but I object to them. Blisters sometimes are as mischievous as bleeding : they cause a general or preternatural excitement of the system, and the parts to which they are applied often mortify.

SECTION XVII.

ACUTE HYDROCEPHALUS, OR DROPSY IN THE HEAD OR BRAIN.

DESCRIPTION.—By *dropsy of the head*, we understand a collection of water, either between the membranes of the brain or in the ventricles. It is divided into two species, *internal* and *external* : internal, when the fluid is collected within the ventricles of the brain ; external, when it is collected between the membranes of the brain. In this latter case it is usually of a chronic nature, and water has been known to increase to an enormous quantity, swelling the head to a prodigious size, widely separating the bones of the head, and sometimes causing an absorption of the brain.

Pain in the head, particularly across the brow, stupor, dilatation of the pupils of the eyes, nausea, vomiting, preternatural slowness of the pulse, and convulsions, are the pathognomonic symptoms of this disease, which have been laid down by the generality of writers.

Hydrocephalus is almost peculiar to children, being rarely known to extend beyond the age of twelve or fourteen ; and it seems more frequently to arise in those of a scrofulous and rickety habit than in others. It is a disease which has been observed to pervade families, affecting all or the greater part of the children at a certain period of their life ; which seems to show that in many cases it depends more on the general habit than on any local affection or accidental cause.

CAUSES.—The disease has generally been supposed to arise in consequence either of injuries done to the brain itself, by blows, falls, &c., from scirrhous tumors or excrescences within the skull, from original laxity or weakness in the brain, or from general debility and an impoverished state of the blood.

With respect to its proximate cause, very opposite opinions are still entertained by medical writers, which, in conjunction with the equivocal nature of its symptoms, prove a source of considerable embarrassment to the young practitioner. Some believe it to be inflammatory, and bleed largely.

Dr. Withering observes that in a great many cases, if not in all, congestion or slight inflammation are the precursors to the aqueous accumulation.

Dr. Rush thinks that, instead of its being considered an idiopathic dropsy, it should be considered only as an effect of a primary inflammation or congestion of blood in the brain. "It appears," says he, "that the disease, in its first stage, is the effect of causes which produce a less degree of that inflammation which constitutes phrenitis or inflammation, and that its second stage is a less degree of that effusion which produces serous apoplexy in adults. The former partakes of the nature of the chronic inflammation of Dr. Cullen, and the asthenic inflammation of Dr. Brown." There are others, again, who view the subject in a very different light. Dr. Darwin supposes inactivity, or torpor of the absorbent vessels of the brain, to be the cause of *hydrocephalus internus* ; but he confesses, in another part of his work, that the torpor of the absorbent vessels may often exist as a secondary effect.

Dr. Whytt, who has published an ingenious treatise on the disease, observes that the immediate cause of every kind of dropsy is the same, viz., such a state of the parts as makes the exhalant arteries throw

out a greater quantity of fluids than the absorbents can take up. From what he afterward mentions, he evidently considers this state as consisting in debility.

As many cases are accompanied with an increased or inflammatory action of the vessels of the brain, and others, again, are observed to prevail along with general *anasarca*, it seems rational to allow that hydrocephalus is in some instances the consequence of congestion or slight inflammation of the brain, or of general debility.

A morbid state of the stomach and bowels has been supposed by some to be a predisposing cause; but, of all the causes which contribute to the production of this disease, cold plays the most conspicuous part.

SYMPTOMS.—Hydrocephalus may, for the purpose of instruction, be considered as exhibiting four stages or sets of symptoms: but the distinction must be viewed as a very arbitrary one; and it should be thoroughly understood that, in many cases, the symptoms of different stages will be found blended together, or one or more of them altogether wanting:—

1. The symptoms which characterize the first or premonitory stage of hydrocephalus are those of common *infantile fever*, such as often accompany the state of dentition or teething, or a foul stomach, or a disordered state of the bowels, more especially when complicated with the presence of worms. The pulse is quick and irregular, the skin hot, and the tongue white; there is also some degree of nausea and vomiting, with thirst, restlessness, and loss of appetite. The child droops; the fauces being very dry, he picks the nose so as often to make it bleed; the body wastes, and the skin is flabby. The symptoms have irregular exacerbations and remissions: so that this state of disease is generally known by the name of *infantile remittent fever*. An exacerbation or remission of the symptoms usually takes place toward evening.

2. The second set of symptoms are those which more unequivocally direct attention to the head as the seat of the disease: they are—headache, sometimes diffused, sometimes referred to a particular spot; impatience of light and noise; a flushed countenance; preternatural redness of the eyes; contracted pupil; tossing the arms to the head, and occasional screaming or shrieking without any obvious cause. With these are joined the common symptoms of infantile fever, and they denote acute inflammatory action of the vessels of the brain.

3. The train of symptoms which characterize a third stage of the disease are of a different kind: the pulse, before quick, becomes slow, intermitting, or irregular; the pupils are permanently dilated, and cease to contract on the approach of light: there is also squinting. Instead of being restless, and tossing about his arms, the child falls into a state of stupor, and is insensible to things and persons around him; the screaming fits occur more frequently, and there is an almost constant moaning; the child will often vomit on being brought into the erect posture; any sudden exertion brings on a fit or convulsion, in which the child dies. These symptoms are supposed to mark that water is now poured out by the vessels of the brain.

4. If the child survives this stage, it is occasionally found that after a time the pulse again rises, so as to beat one hundred and fifty or more in a minute, and is withal small and feeble. The child lies perfectly insensible, and takes nourishment from actual inability to swallow; the stools and urine pass involuntarily; the face is pale; the tongue dry and brown; convulsions or partial paralysis occurs: occasionally one side becomes perfectly paralytic; severe pustular ophthalmia or inflammation of the eyes is sometimes witnessed. The immediate approach of death is often preceded by gangrenous spots, appearing particularly about the neck, lips, or tips of the ears.

The first stage is sometimes wanting, the attack being sudden, and perhaps the first evidence of the disease a strong convulsive fit. In many instances the pulse never becomes slow. In a still larger proportion of cases the disease never exhibits that remarkable change from the slow to the rapid pulse which characterizes the fourth stage. Occasionally there is neither permanent contraction nor dilatation of the pupil, but throughout the *whole* course of the disease an irregularity in the contractions of the iris may be noticed. The pupil of the eye dilates on the approach of the candle, and contracts as it recedes.

In a few cases I have seen children continue sensible to the last moment. Other and even more singular varieties in the symptoms will be found recorded in the writings of authors. It is certainly worthy of remark, considering the universality of delirium as a symptom of inflammation of the brain in the adult, that aberration of intellect can scarcely be said to occur in this, or indeed in any of the diseases of early life.

The duration of hydrocephalus is liable to almost as much variation as the symptoms which characterize it. It has been known to prove fatal in a week. Some cases run on even as far as two months, but these are comparatively rare. The average duration of the complaint may be stated to be three weeks. — GREGORY.

The extremities are cold, showing a determination of blood to the head, or an unequal circulation, and in some cases there is costiveness in the commencement of the disease; there is in others, particularly when the attack is very violent, free purging; there is also, generally, great heat or inflammation of the head, and this may be the principal cause of the disease.

(For a description of the chronic form of hydrocephalus, or that which is accompanied by enlargement of the skull, and which is a disease of rare occurrence, the reader may refer to my "American Practice," volume i., pages 480, 481.)

DISCRIMINATION. — It is to be distinguished from apoplexy by its being attended with fever, and from simple typhus by the paroxysm being very irregular, with perfect intermissions many times a day. Whatever difficulties there may be in the early stage, particularly in infants, there is no disease more easily distinguished in the advanced stages than hydrocephalus. "Indeed," says a writer, "how can we mistake when we see a child rolling its head on the pillow, or perhaps sawing the air with one hand, while the opposite side is palsied; with a hectic on the cheek, his eyelids half concealing the pupil, and the eyes deprived of their vivacity by the filmy covering of the cornea; the complete dilatation of one or both pupils, and the suffusion of the adnata; drawing a long sigh; frequently grinding his teeth; quite incoherent, or in a state of complete insensibility; with a burning fever on the skin, or sweat forced from every pore: and all these symptoms alternating with, and at last finished by, a palpitating breathing and violent convulsions?"

DISSECTION. — An accumulation of water in the ventricles of the brain is one of the most common appearances to be observed on dissection. In different cases this is accumulated in greater or less quantities: it sometimes amounts only to a few ounces, and occasionally to some pints. When the quantity of water is considerable, the fornix is raised at its anterior extremity, in consequence of its accumulation, and an immediate opening or communication is thereby formed between the lateral ventricles. The water is of a purer color and more limpid than what is found in the dropsy of the thorax, or abdomen; it appears, however, to be generally of the same nature with the water that is accumulated in these cavities. In some instances, the water in hydrocephalus contains a very small proportion of coagulable matter, and in others it is entirely free from it. When the water is accumulated to a very large quantity in the ventricles, the substance of the brain appears to be a sort of pulpy bag, containing a fluid. The skull upon such occasions is very much enlarged in its size, and altered in its shape; and it appears exceedingly large in proportion to the face.

COMMON PRACTICE. — Bleeding repeatedly from the arm or jugular veins, mercury, blisters, &c.

REFORMED PRACTICE. — *Indications of Cure:* 1. The indication of cure in this disease is, to lessen the inflammatory action, by equalizing the circulation, and thus preventing a serous effusion. 2. When water has been collected, to evacuate it through the medium of the absorbents, by stimulating them to a healthy action.

From the nature of this complaint, it is evident that it becomes more difficult to remove than most others. But by prompt and suitable measures, it may often be successfully treated.

When the disease is marked by inflammation, the first steps to be taken are, to use such means as are calculated to subdue it. Bleeding is resorted to by physicians generally; but with what propriety, I am unable to determine. It may produce or exasperate, but can never cure the disease. The usual effect

of blood-letting, viz., that of debility or prostration, is sensibly experienced in hydrocephalus, and that, too, without at all lessening arterial action.

To reduce the inflammation, our reliance must be placed upon more appropriate means, and such, in general, must be resorted to as have been laid down under the head of other inflammatory complaints, in order to divert the blood from the head, and recall it to the extremities and the surface. Let the feet and legs be immersed in warm ley-water, and well rubbed with flannel or muslin. Let the surface be bathed with the same; both of which processes must be often repeated, or according to the urgency of the symptoms.

Great reliance in the treatment of this disease must be placed upon purgatives, and such as act equally through the whole alimentary canal. Our common purgative, combined with cream of tartar, answers well for this purpose. About equal parts of the two articles may be combined, and given in any suitable vehicle.

It is difficult to lay down any precise rule for the repetition of purgatives, as this depends upon the violence of the disease, constitution, &c.; but as a general rule, in severe attacks they may be given daily, and in protracted cases every two or three days. In most cases immediate amendment follows their administration, either when there is inflammation or serous effusion.

It is indispensably necessary in this, as in most other diseases, to pay strict attention to the capillary system. Such medicines must be given, and such means taken, as are calculated to promote perspiration. In addition to bathing the feet and surface mentioned above, sudorific medicines must be given. For this purpose, give the sudorific or sweating drops, in doses according to the age of the child, to be accompanied with the free use of the infusion of spearmint (*mentha sativa*), and the same tea or infusion to be given when the child is thirsty. This plant has a threefold effect upon the system: first, it allays the irritability of the stomach; second, it promotes gentle perspiration; third, it promotes a preternatural discharge of urine.

Should the sweating-drops prove too stimulating, and thus increase the febrile excitement, substitute the diaphoretic powders: two or three grains may be given to a child two years old three or four times through the course of the day, and particularly given at night, to allay irritation, procure rest, promote perspiration, &c.

Should all these means fail of producing perspiration, which, from the dry and constricted state of the skin, may occasionally be the case, let the child be held in the arms of its mother or nurse, and a blanket thrown around it, and let both be placed over a tub containing a strong decoction of bitter herbs. The steam must be permitted gradually to come in contact with the body of the child; after which let it be wrapped in a blanket, and placed in a bed or cradle. If benefit is experienced from this process, let it be repeated.

In almost every case of hydrocephalus, there is great heat or inflammation of the head, and therefore it is necessary to apply refrigerant or cooling lotions or applications to it. Equal parts of spirits, rain-water, and vinegar, to which a little salt has been added, may be often applied to the head, tepid. I have applied it cold, and sometimes warm: and when I have ascertained which affords the most relief, I have continued it of the same temperature.

Should this only partially relieve, or should it lose its efficacy after frequent applications, let it be omitted, and let hops simmered in vinegar be applied to the whole head. Great benefit is invariably experienced from these applications: the child, after great restlessness and pain, will generally fall asleep after they have been applied.

In some cases, where the disease has been of an unusually obstinate character, resisting the ordinary remedies of this nature, I have applied with decided benefit a poultice of slippery-elm bark over the whole head, to be removed before it becomes dry. Care must be taken in making these applications that there be not too speedy an evaporation. The head should be covered with a cap or handkerchief.

I have administered (and, as far as I have been able to ascertain, with great advantage) the tincture of foxglove or digitalis. Five or six drops (according to age) of the tincture may be given in a little

parsley-tea, at morning, noon, evening, and bedtime : other internal remedies to be suspended during the day, while these drops are administered. Purgatives, however, may be given in the morning, if necessary, and the diaphoretic powders at night.

Mustard-plasters must be kept to the feet, sufficiently strong to excite a little redness, after which let them be applied between the shoulders, and thus changed alternately.

Cupping in this disease has been highly spoken of by some. A physician of this city became very celebrated some years ago for the cure of dropsy of the head, and his principal reliance was upon this operation. I have occasionally tried it in the worst or most desperate cases, but I am not clear in my own mind how far it is beneficial. In one case, which was given up as incurable, and one of the worst I ever saw, as a last alternative, I ordered the child to be cupped : it appeared to mitigate all the pain, the child fell asleep, and soon recovered. It might be resorted to, should all other means fail ; the cups should be placed upon the temples and nape of the neck.

REGIMEN.—It is very necessary that the room should be kept quiet and somewhat darkened. For nourishment, give arrowroot-tea, milk, panado, &c.

When nourishment can not be taken by the mouth, it may be given by the way of injection. By this treatment we have cured many cases of this disease which appeared beyond the control of medicine.

SECTION XVIII.

VERMES, OR WORMS.

DESCRIPTION.—These are chiefly of three kinds, viz. : the *tania*, or tape-worm ; the *tercs*, or round and long worm ; and the *ascarides*, or round and short worm. There are many other kinds of worms found in the human body ; but as they proceed in a great measure from similar causes, have nearly the same symptoms, and require almost the same method of treatment as these already mentioned, we shall not spend time in enumerating them.

The tape-worm is white, very long, and full of joints. It is generally bred either in the stomach or small intestines. The round and long worm is likewise bred in the small entrails, and sometimes in the stomach. The round and short worms commonly lodge in the rectum, and occasion a disagreeable itching about the scat. The long round worms occasion squeamishness, vomiting, a disagreeable breath, gripes, looseness, swelling of the abdomen, swoonings, loathing of food ; and at other times a voracious appetite, a dry cough, convulsions, epileptic fits, and sometimes a privation of speech. These worms have been known to perforate the intestines, and get into the cavity of the belly. The effects of the tape-worm are nearly the same with those of the long and round, but rather more violent.

Andry says that the following symptoms particularly attend the *solium*, which is a species of tape-worm, viz., swoonings, privation of speech, and a voracious appetite. The round worms, called *ascarides*, besides an itching of the anus, cause swoonings, and tenesmus, or an inclination to go to stool.

CAUSES.—Worms may proceed from various causes ; but they are seldom found except in weak and relaxed stomachs, where the digestion is bad. Sedentary persons are more liable to them than the active and laborious. Those who eat great quantities of unripe fruit, or who live much on raw herbs and roots, are generally subject to worms. There seems to be an hereditary disposition in some persons to this complaint.

SYMPTOMS.—The common symptoms of worms are, paleness of the countenance, and at other times a universal flushing of the face ; itching of the nose (this, however, is doubtful, as children pick their noses in all diseases) ; starting and grinding of the teeth in sleep ; swelling of the upper lip ; the appetite sometimes bad, at other times quite voracious ; looseness ; a sour or stinking breath ; a hard, swelled abdomen ; great thirst ; the urine frothy, and sometimes of a whitish color ; griping or colic pains ; an

involuntary discharge of saliva, especially when asleep; frequent pains of the side, with a dry cough, and unequal pulse; palpitations of the heart; swoonings, drowsiness, cold sweats, palsy, epileptic fits, with many other unaccountable nervous symptoms, which were formerly attributed to witchcraft, or the influence of evil spirits. Small bodies in the excrements, resembling melon or cucumber seeds, are symptoms of the tape-worm. Says Buchan—"I lately saw some very surprising effects of worms in a little girl about five years of age, who used to lie for whole hours as if dead. She at last expired, and, upon opening her body, a number of the *tercs*, or long round worms, were found in her intestines, which were considerably inflamed; and what anatomists call an *intus-susceptio*, or the involving of one part of the gut within another, had taken place in no less than four different parts of the intestinal canal."

TREATMENT.—Calomel is now principally used for the removal of worms: but this medicine is very dangerous to administer. Calomel or mercury is the basis or principal ingredient of most of the highly-reputed nostrums for worms, such as worm lozenges, vermifuges, &c. The following preparation will be found very effectual in expelling different kinds of worms from the system:—

Take Carolina pinkroot (*spigelia maylandica*),
Alexandria senna (*cassia senna*),
manna (*fraxinus ornus*): of each half an ounce.

Bruise all, and add to the powder one quart of boiling water; let it stand a short time, in order to extract the strength of the articles; sweeten with molasses, and add a small quantity of milk. For a child five years old, give a gill three or four times a day on an empty stomach, and if this does not purge, increase the dose until the effect is produced.

Worms sometimes ascend into the throats of children and choke them. This symptom may readily be removed by giving a little salts-and-water: repeating it occasionally will often expel them, and always is a preventive. This will be found a very valuable remedy for different kinds of worms; and even should none exist, it will cleanse the stomach and bowels, and prove very beneficial. I have tried various articles for worms, but find that the compound described above exceeds every other preparation.

When small worms infect the rectum, a weak infusion of tobacco, used as an injection, will dislodge them, and the above medicine should likewise be given.

This treatment may also be used for the *tania*, or tape-worm, but I can not recommend it as a certain remedy, nor do I know any treatment that is always capable of removing this species of worms; I have given thirty or forty different agents, but none of which have proved entirely effectual. A person informs me that a small quantity of indigo cured one case in Kentucky. The male fern has also been highly extolled for it, but I can not speak with any certainty of its effects. One case was cured in one of the New-England states by a very curious process, and which perhaps is an infallible remedy, but which to many might be a very unpleasant one: The patient was suffered to get extremely hungry, after which he was suspended over a boiling vessel of food, with his mouth open, in order that the worm might inhale the steam arising from it. This had the desired effect: the reptile rushed from the stomach to the mouth to satisfy the cravings of hunger, when his head was clipped with a pair of scissors, and thus removed.

A young woman at Peekskill, New York, was attended for dyspepsia. After her decease, worms were discharged from her mouth.

SECTION XIX.

PERTUSSIS, OR HOOPING-COUGH.

DESCRIPTION.—This is a disease known by a convulsive, strangulating cough, with hooping, returning by fits that are usually terminated by vomiting. Children are most commonly the subjects of this disease, and it seems to depend on a specific contagion, which affects them but once in their life. The disease being once produced, the fits of coughing are often repeated without any evident causes; but, in

many cases, the contagion may be considered as only giving the predisposition, and the frequency of the fits may depend upon various exciting causes, such as violent exercise, a full meal, the having taken food of difficult digestion, and irritation of the lungs by dust, smoke, or disagreeable odors. Emotions of the mind may likewise prove an exciting cause.

CAUSES.—It is evidently produced by contagion. Its proximate or immediate cause seems to be a viscid matter or phlegm lodged about the bronchia, trachea, and fauces, which sticks so close as to be expectorated with the greatest difficulty. Some have supposed it to be a morbid irritability of the stomach, with increased action of its mucous glands; but the affection of the stomach which takes place in the disease is clearly only of a secondary nature, so that this opinion must be erroneous.

SYMPTOMS.—The hooping-cough usually comes on with a difficulty of breathing, some degree of thirst, a quick pulse, and other slight febrile symptoms, which are succeeded by a hoarseness, cough, and difficulty of expectoration. These symptoms continue perhaps for a fortnight or more, at the end of which time the disease puts on its peculiar and characteristic form, and is now evident, as the cough becomes convulsive, and is attended with a sound which has been called a *hoop*.

When the sonorous inspiration has happened, the coughing is again renewed, and continues in the same manner as before, till either a quantity of mucus is thrown up from the lungs, or the contents of the stomach are evacuated by vomiting. The fit is then terminated, and the patient remains free from any other for some time; and shortly afterward returns to the amusements he was employed in before the fit, expresses a desire for food, and when it is given to him, takes it greedily. In those cases, however, where the attack has been severe, he often seems much fatigued, makes quick inspirations, and falls into a faint. On the first coming on of the disease, there is little or no expectoration, or if any, it consists only of thin mucus: and as long as this is the case, the fits of coughing are frequent and of considerable duration; but on the expectoration becoming free and copious, the fits of coughing are less frequent, as well as of shorter duration. By the violence of coughing, the free transmission of blood through the lungs is somewhat interrupted, as likewise the free return of the blood from the head, which produces that turgescence and suffusion of the face which commonly attend the attack, and in some instances brings on a hæmorrhage either from the nose or ears. The disease, having arrived at its height, usually continues for some weeks longer, and at length goes off gradually. In some cases, however, it is protracted for several months, or even a year, and sometimes terminates in other complaints.

PROGNOSIS.—Although the hooping-cough often proves tedious, and is liable to return with violence on any fresh exposure to cold, when not entirely removed, it nevertheless is seldom fatal, except to very young children, who are always likely to suffer more from it than those of a more advanced age. The danger seems indeed always to be in proportion to the youth of the person, and the degree of fever and difficulty of breathing which accompany the disease, as likewise the state of debility which prevails. It has been known in some instances to terminate in apoplexy and suffocation. If the fits are terminated by vomiting, it may be regarded as a favorable symptom, as may likewise the taking place of a moderate and free expectoration, or the ensuing of a slight hæmorrhage from the nose or ears.

DISSECTION.—Dissections of those who die of the hooping-cough usually show the consequence of the organs of respiration being affected, and particularly those parts which are the seat of catarrh. When the disease has been long protracted, it is apt to degenerate into pulmonary consumption, asthma, or visceral obstructions, in which last case the glands of the mesentery are found in a hard and enlarged state.

COMMON TREATMENT.—Squills, antimony, bleeding, &c.

REFORMED PRACTICE.—It is generally reckoned a favorable symptom when a fit of coughing makes the patient vomit: this cleanses the stomach, and greatly relieves the cough; it will therefore be proper to promote this discharge, by giving a lobelia-emetic. Emetics not only cleanse the stomach, which in this disease is generally loaded with viscid phlegm, but they likewise promote perspiration and the other secretions, and ought therefore to be repeated according to the obstinacy of the disease. They should not, however, be strong: gentle vomits, frequently repeated, are both less dangerous and more beneficial than strong ones. For this purpose, a teaspoonful of the tincture of lobelia may be given to a child a

year old, in any kind of tea sweetened, every half hour, till it operates as a gentle emetic; it may be repeated whenever a fit of coughing occurs, and there is a sense of suffocation; or if there is great debility, or the attack is not very severe, a sufficient quantity may be given to loosen the mucus or phlegm, and to cause the child to breathe freely. The following syrup may also be given: four ounces of elecampane-root and half a pint of honey; bake it in a well-glazed earthen pot in a heated oven. If the root be green, it needs no water; if dry, add half a pint of water. A teaspoonful of the syrup to be given occasionally, or three times a day. The pulmonary syrup is likewise an excellent remedy in this complaint.

Opiates are sometimes necessary to allay the violence of the cough. For this purpose, a little of the syrup of poppies, according to the age of the patient, may be taken in a cup of hyssop or pennyroyal tea, and repeated occasionally. The bowels must be kept freely open by gentle laxatives. A good medicine for this purpose is the cold-pressed castor-oil, mixed with a little sweetened milk: a teaspoonful or two may be given to a child one year old two or three times a day, as there is occasion; for those that are older, the dose must be increased, and repeated till it has the desired effect. Those who can not be in this manner induced to take the castor-oil, may have it mixed with a little syrup or currant-jelly to disguise the taste; most children are fond of syrups and jellies, and seldom refuse a disagreeable medicine when mixed with them. Bathe the feet in warm ley-water every night, and apply draughts or sinapisms.

REGIMEN. — Whatever injures the digestion, obstructs the perspiration, or relaxes the solids, disposes to this disease; consequently its cure must depend upon cleansing and strengthening the stomach, bracing the solids, and at the same time promoting perspiration and the different secretions. The diet must be light and of easy digestion: for children, good bread made into pap or pudding, chicken-broth, with other light spoon-meats, are proper; but those who are further advanced may be allowed gruel, and, if the fever be not high, a little boiled chicken. The drink may be hyssop or pennyroyal tea, sweetened with honey or sugar-candy, small-wine whey, or, if the patient be weak, he may sometimes be allowed a little wine.

One of the most effectual remedies in the whooping-cough is change of air. This often removes the malady, even when the change seems to be from a purer to a less wholesome air; this may in some measure depend on the patient's being removed from the place where the infection prevails. Most of the diseases of children are infectious; nor is it at all uncommon to find the complaint prevailing in one town or village, when another at a very small distance is quite free from it. The feet should be frequently bathed in lukewarm water, and a sweating or strengthening plaster kept constantly between the shoulders.

PART FOURTH.

PHYSIOLOGICAL AND MORAL ELEVATION OF MANKIND.

"TRAIN UP A CHILD IN THE WAY HE SHOULD GO, AND WHEN HE IS OLD HE WILL NOT DEPART FROM IT."

HAVING treated of all the subjects immediately connected with the reproduction of our race, I deem it expedient to conclude the work by considering briefly a few more subjects which I regard as very important to the well-being of our species, although somewhat disconnected with this branch of medicine.

CHAPTER I.

PHYSICAL TRAINING OF CHILDREN.

THERE is no subject so intimately connected with the happiness of our race, and which is at the same time so much neglected, as the proper education of infants and children.

I shall, therefore, in as brief and concise a manner as possible, lay down such rules and regulations as I deem necessary for the due discharge of the important duties devolving upon parents toward the rising generation.

I shall commence with the proper physical training of infants, because this is very justly considered the foundation on which all other correct training must be based. If the physical organization be deranged, it will materially interfere with the due formation of the intellectual, moral, and religious character of the child.

In laying down the proper rules for the formation of a healthy physical constitution, I shall comprehend those which are necessary in dress, food, bathing, air, exercise, exposure, &c.

SECTION I.

DRESS.

THE clothing of infants will always be more or less under the dominion of the fashion of the day, and therefore we need not specify any particular form or construction as that which ought constantly to be preferred. The leading qualities required in the material are lightness, softness, and warmth; and it must consequently vary somewhat according to the climate and season of the year. In construction, the dress ought to admit of being easily put on and taken off; and while it affords ample protection to the body, it

ought to admit of the fullest expansion of the chest and abdomen, and perfect freedom of motion in the limbs and joints. Provided it fulfil these ends, there will be no occasion for interfering with the mother's taste, although plainness is always the most becoming. But whatever tends either to compress the body or to restrain the arms or legs, ought to be unrelentingly forbidden : and particularly every approach to the former practice of swaddling the infant in rollers like a mummy—a practice still prevalent in many parts or sections, and the only advantage of which is, that the mother, when called out of the room or house for a time, can hang up her infant on a nail, like an inanimate bundle, with the positive certainty of finding it in the same position on her return, neither burnt to death by the fire, nor with its face scratched or its eyes put out by the cat, as sometimes happens when it is carelessly left sprawling on the floor, or even in its cradle.

If the child has been prematurely born, or is of a weak constitution, or if it be the winter season, flannel ought generally to be preferred for the whole of the dress, but not in contact with the skin. From the protection which it affords, and also the slight stimulus which it gives to the cutaneous vessels, it is extremely useful in warding off the internal congestions, and inflammatory and bowel complaints, to which weakly children are liable. I know an instance where a very delicate and premature infant was saved, contrary to all expectation, by lying imbedded in cotton in a basket, and was thus safely brought to town from a considerable distance. But whatever material is used, the greatest attention should be paid to frequent changes and to avoiding irritation. When, as sometimes happens, from any unusual sensibility of the skin, or other causes, flannel induces perspiration, cotton or fine linen should be preferred—care being taken never to put them on till thoroughly aired and made comfortably warm at the fire.

As to the other parts of dress, it is impossible to lay down any specific rules, because they ought to vary in quantity and quality according to individual circumstances. The great thing is, never to forget that the supply of animal heat is smaller in infancy than at any later period ; and that, consequently, the dress ought to be such as to insure due warmth, more especially during the winter and spring. The necessity of warmth in infancy is strikingly illustrated by the tender care with which many of the lower animals protect their young from external cold. Moved by instinct, the hen gathers her chickens under her wings, and fosters them with her own warmth ; and when left to its own impulse, the infant nestles in its mother's bosom, and shuns the contact of cold. Its dress, therefore, must be such as to insure its comfortable and equal warmth, without any chance of overheating or relaxing. For, however prejudicial exposure to cold may be in infancy, *excessive wrapping up*, or living in too hot rooms, is not less hurtful, and ought to be as scrupulously avoided as the opposite extreme. Perfect freedom of motion in the limbs and joints, and the absence of all pressure on the chest or bowels from undue tightness of the dress, are equally indispensable to health, and if it is faulty in any of these respects, not an hour should be lost in making the requisite alterations. As far as possible, too, strings should be used instead of pins for fastening the clothes. Where pins are not very carefully inserted, they are apt to penetrate the flesh on any accidental twisting of the body, and to produce serious suffering and danger. By good management, indeed, they may be entirely dispensed with.

The common practice of dressing infants in long flowing clothes during the first few months, is attended with the advantage of protecting the body and lower extremities against cold air and draughts ; and when it is not carried so far as to overheat the child, no harm can arise from following it. In cold weather, the feet should be further protected by soft woollen socks or knitted worsted shoes, which retain warmth without in any degree compressing the feet.

Dr. Eberle has very properly called attention to a glaring inconsistency in infant clothing, which ought to be immediately remedied, and which consists in leaving the neck, shoulders, and arms, quite bare, while the rest of the body is kept abundantly warm : a practice which is generally continued during the first five or six years of life, and the impropriety of which, especially in winter, shows itself in the dry rough state of the skin on the arms and hands, as contrasted with its softness and smoothness where it is covered. Dr. Eberle remarks, that, while adults are so careful to keep these parts well covered, it is strange

that children should be universally left without equal protection, not only in winter, but even frequently out of doors in cold and damp weather. "It has been supposed," he says, "that this custom is one of the principal reasons why inflammatory affections of the respiratory organs are so much more common during the period of childhood than at a more advanced age; and there can be no doubt that its influence in this respect is very considerable."—"Croup, inflammation of the lungs, catarrh, and general fever, are doubtless frequently the consequences of this irrational custom; and it is not improbable that the foundation of pulmonary consumption is often thus laid during the first few years of life."* These remarks are strongly borne out by the results of late investigations made in Europe, which prove that the proportion of deaths in childhood from inflammatory affections of the organs of respiration is greatly beyond what was formerly supposed. Thus, in the appendix to the first annual report of the registrar general of births, marriages, and deaths, in England, we find it stated by Mr. Farr, that, among "the diseases of the respiratory organs, pneumonia, which, it must be recollected, includes 'inflammation of the chest,' was next in fatality to consumption; but *young children furnished the majority of the cases*: of 379 fatal cases of pneumonia in the metropolis, and in some county districts, 228 were children under three years of age." (Report, p. 74.) When we take further into consideration that consumption most frequently attacks the upper part of the lungs, we have an additional presumption that the unguarded exposure of the corresponding parts of the chest is not without its influence in determining the subsequent disease. That this exposure really operates as a predisposing cause, is rendered still more probable by the greater liability to consumption of females than of males. Female children continue to have the shoulders and upper part of the chest uncovered, while in males the practice ceases with the assumption of their distinctive dress.† In conformity with this, we find from Mr. Farr's analysis of the registrar's report (p. 74), that while "bronchitis, pleurisy, pneumonia, hydrothorax, and asthma, (diseases from active exposure), destroyed more males than females out of the same number living, consumption and decline destroyed more females than males, in the ratio of 4,155 to 3,771." I do not mean to affirm that this defect of dress is the sole cause of the excess of consumption in females; but when their comparative exemption from many of the other causes is considered, such as reckless exposure to the weather and to fatigue, as well as the debilitating effects of irregular living and active dissipation, it will be difficult to deny that it has a share in the result, and ought, therefore, to be guarded against. This opinion is, I find, confirmed by the testimony of a late popular writer,‡ who declares herself "convinced by repeated observation in various countries, that children who have their bosoms and arms covered for the first two years, are not subject to those severe coughs and inflammations of the lungs, which, during the time of teething, are fatal to so many."

Knowing, however, the strong tendency of excited feeling to run into extremes, I would here once more caution parents against falling into the opposite error of loading the child with too many clothes, and covering the shoulders and neck with warm tippets or shawls, even within doors. More mischief may be done by the excessive relaxation thus induced, than by leaving them exposed; all that is wanted is, that the *ordinary upper dress* shall extend sufficiently high to protect the neck and upper part of the chest from variations of temperature, and that the sleeves be made long enough to reach nearly to the wrist.

The head is very commonly kept too warm in infancy; which, considering the natural tendency to nervous excitement and rapid circulation in early life, is an improper practice. In warm weather, the thinnest possible covering will be sufficient for its protection; and even in cold weather, a warmer cap

* Eberle on the "Diseases of Children," p. 24.

† Dr. Bell, also, in supposing that the parents who advocate this defective dress for infants might think they were following the example of Spartan mothers, well remarks: "Many are, we fear, influenced by more unworthy motives—motives which an affectionate mother ought to be ashamed to avow—such as a desire to imitate other people who dress their children in this way, and a love of exposing their beautiful breasts and round arms! Do these parents love that their children should have catarrhs, croups, violent colics, &c.? One would suppose they did. Or are they prepared to answer this question: 'Is it a greater pity for a child to be unfashionably dressed, than to be tossing about in all the agonies of disease, and threatened every hour with suffocation, and not unfrequently finding repose only in the sleep of death?' What, we would ask, has fashion to do with children, or they with fashion? It is enough for mothers and grown daughters to be the victims to fashion, as when they parade with bare shoulders and tightly-corseted waists, and paper-soled shoes, without inflicting punishment on young beings, who, insensible to the admiration of the idle and the silly, find no compensation for their sufferings in gratified vanity."

‡ "Advice to Young Mothers on the Physical Education of Children, by a Grandmother," chap. i.

will be required only when going into the open air.* When in the house, the temperature is generally kept high enough by fires to render much wrapping up neither necessary nor safe. When cold is induced by wearing thin caps, it is generally in consequence of the infant being laid to sleep with the head immersed in a very soft warm pillow, which causes an unusual flow of blood toward it, accompanied by considerable perspiration on its surface. This plan has the double disadvantage of leaving the upper part of the head which is not sunk in the pillow comparatively cold, while the rest is overheated and in a state of perspiration. In such circumstances the rational remedy is, not to put on a thicker covering by day, but, by the use of a proper pillow, to guard against overheating by night. When the head is kept very warm, the nervous excitability is greatly increased, so that every change makes an impression upon the infant, and any accidental irritation is more likely to be followed by spasmodic or convulsive fits.

When, in the lapse of a few months, strength and activity, and their natural concomitant a desire for motion, become developed, the dress requires to be so arranged as to leave the feet free and unencumbered. Soft warm stockings and easy comfortable shoes are then advisable, but no compression in any form ought to be permitted. In making the change to short clothes, however, regard must be had to the weather, and due care be taken to keep the legs and feet warm when the child is carried out into the open air.

Nearly akin to dress by day is the provision of proper bedclothing during the night, and during the many hours of sleep. If an infant is buried under a mass of bedclothes when asleep, and dressed in the ordinary way when awake, the very transition is apt to be hurtful. Consistency in this respect is as material as in every other. I have seen mothers guard carefully against too much wrapping up by day, who nevertheless acted at night as if the health and comfort of the infant depended entirely on the quantity of blankets which it could sustain without being smothered. And yet, considering that three parts out of four of infant life are spent in sleep, nothing can be more preposterous than thus to counteract with one hand the good done by the other.

In arranging night-coverings, the soft feather-bed is very often estimated as nothing; or, in other words, the same provision of blankets is considered equally indispensable, whether we lie upon a hard mattress, or immersed in down. It is from this confusion that the common mistake above alluded to takes its rise. The mother, looking only to the coverings laid *over* the child, forgets those on which it lies, although in reality the latter may be the warmer of the two. An infant deposited in a downy bed has at least two thirds of its body in contact with the feathers, and may thus be perspiring at every pore, when, from its having only a single covering thrown over it, the mother may imagine it to be enjoying the restorative influence of agreeable slumbers. In hot summer weather, much mischief may be done by an oversight of this kind.

As already mentioned, the infant constitution possesses a low power of generating heat, and therefore it requires to be warmly rather than imperfectly clothed during sleep as well as during its waking hours.

* A better practice still is now getting into fashion. It is, for the infant not to wear caps at all. The flannel slip or half shawl, which is put round the neck and shoulders of the newly-arrived being, when it is in its mother's or nurse's arms, can easily be made to give the requisite protection to the upper and back part of the head. Very soon the natural covering of the hair will be found to be sufficient. Of the inconveniences and absurdity, too, of a child's wearing a cap in the house, and especially in the nursery, I have elsewhere spoken; and as experience since the time in which I expressed my opinions has still further confirmed me in their accuracy, I will repeat what I then said on the subject: "The bad effects of this covering to the head are manifold. It invites, by its warmth, a still greater quantity of blood to a part (the brain) which is soft and vascular, and liable to inflammation from the large amount of this fluid in it. Surely this is no reason why a mother should put on, and a physician allow, a warm cap. The scalp or tegument covered by the skin is tender and irritable, and prone to eruptions in early life: no cause certainly why it must therefore be chafed and irritated by a worked cap full of rough projections. The ears are apt to inflame and discharge, or the skin behind them to be excoriated. Now, assuredly, we shall not prevent these effects by excluding air from the ear, and keeping this part closely pressed against the side of the head. In vain does the poor child scratch its head with all possible force; in vain does it cry and toss about on account of the itching, or heat and pain caused by the cap! The thing is pretty, and therefore must be worn, even though the mother should pass sleepless nights in consequence of the child's fretfulness, or the doctor have to be sent for in order to devise means for composing the little dear!

"We have not yet adverted to the string which passes under the chin, and which is at times tied, or becomes so tight by the child throwing its head back, as to act the part of a ligature, and give the poor little sufferer the sensation of the first stage of hanging.

"In our professional experience, we have often found it impossible to cure cases of diseased scalp, and sore ears, so long as caps were worn. These left off, the sores and breakings out soon disappeared." — BELL (*"Journal of Health,"* vol. ii, p. 85.)

But here, as in everything, the extremes ought to be carefully guarded against ; and while due warmth is provided for when in bed, reason and consistency ought to be adhered to, and excessive heat be as scrupulously avoided as debilitating cold. [Combe on Infants.]

A fear of inducing relaxation by excessive wrapping up, has led many parents to the opposite extreme of clothing their children in a most imperfect and injurious manner. In alluding to this fact, and to the feeble power of resisting cold in infancy, Dr. Maunsell, of Edinburgh, very forcibly expresses the wish that he could “adequately depict one of those miserable victims of parental vanity, whose appearance in our streets will sometimes, upon a March or November day, strike cold into our hearts. The cap and feathers set upon, not covering, the child’s head, and probably of a color and richness contrasting mournfully with blue ears, sharpened nose, and shrunken cheeks, in which cold has assumed the features of starvation—the short kilt and Highland hose, exposing between them cracked and shivering knees—altogether require for their description more graphic power than we presume to lay claim to.” I have known families to which this description applied with almost literal accuracy ; and although acute disease was not the immediate result, several of the children soon manifested symptoms of glandular obstruction, and a strong tendency to scrofula. The dress, therefore, ought to be amply sufficient to protect the child from every sensation of cold or chill ; but, at the same time, light in quality and easy in construction, so as to admit of the utmost freedom and activity of motion without any chance of overheating.

SECTION II.

TIGHT-LACING.

THERE are few customs, if any, which exert such a baneful influence on the system as that of tight-lacing, and therefore can not be too generally censured. It produces no benefit, real or imaginary, but positive injury ; and is the offspring of great weakness, folly, and sin.

The structure of the chest is such that it forms a spacious arched chamber or cavity, in which the heart, lungs, and innumerable arteries, veins, valves, and muscles, perform their important offices : contracting, dilating ; inhaling fresh air with one set of cells, using part of it to purify the venous blood, and then exhaling it through another set ; receiving from the veins blood which has gone its round, cleansing it with wonderful art in a few moments, and sending it on again by the arteries to meander through and renovate continually every part of the frame. At every breath, the lungs dilate and contract ; at every breath, the heart receives a tide of blood into one of its divisions, and pours out an equal tide at another—propelling it with a force equal to forty or fifty pounds’ weight. For all these delicate and momentous operations, the chamber which nature has provided is exactly of the proper size—not a hair’s breadth too small, nor a hair’s breadth too large : nay, it is *large enough*, and the vital movements can be performed only by certain motions of the bones which compose it. The ribs *hinge* into the spine, and the gristles and collar-bones hinge into the sternum ; there are joints also where the ribs and gristles unite. By means of these hinges and joints, the bones and gristles incessantly play in and out, or up and down, at each movement of the lungs ; and to *their* healthful movement the *freedom* of that play is indispensable.

Now a corset, or tight-lacing of any kind, fetters the freedom of those bones, destroys all the advantages of the joints and hinges which nature has provided, and thus lessens the room in which the lungs and heart move, besides depriving them of the aid, the impulse, they derive from the motion of the bones and muscles. But all this is not half the mischief. The ribs, especially at the joints or hinges, being soft in young people, and the gristles much softer, are compressed by the lacing so as to approach nearer and nearer to the breast-bone in front ; sometimes they lap over it and meet each other : nay, there are instances of tight-lacing where the ribs have not only passed the sternum and met, but have overlapped each other !

Far short of that extreme, however, fatal effects may be expected. Quite a moderate degree of lacing suffices to bring the points of the ribs several inches forward, and to press the sternum inward — narrowing just so much that chamber which was at first not a hair's breadth too large for the lungs and heart to work in, besides stopping the auxiliary motion of the bones themselves. The consequences need not be detailed. That the lungs, thus cribbed and forced to beat in vain against the contracted walls of their prison, should be inflamed and diseased; that the breathing should become short and difficult; that the heart should be subject to unnatural palpitations, and no longer drive the blood with regular and healthful vigor along the arteries; that youth's joyous and active sports must be prematurely abandoned; and that life itself, perhaps, after years of suffering, should retire from its besieged and oppressed citadel, can excite no wonder.

One fact will show most strikingly the horrible violence done to nature by tight-lacing. The fabric I have described — composed of the spine, the sternum, the ribs, and their gristles — is naturally cone-shaped, smallest at the top, and broadest at the bottom, where the diaphragm separates it from the stomach, &c. Now, by lacing, the lower ribs are so compressed — their greater portions being gristle — that the lowest part of the cone is made the smallest: and this it is which makes those foolishly-admired waists, *tapering downward*. Let every man who does not wish to marry consumption, carditis, angina pectoris, or dyspepsia, beware of that taper waist!

When (as it always is) the lacing is carried below the diaphragm, injury little less fatal ensues. Then softer and more compressible parts are affected — various muscles, the stomach, and other viscera. I leave you to infer the inevitable mischief to these from reducing them, by force, to half the volume which the all-wise Creator has given. Thus cramped and fettered, it is impossible that their nice and complicated functions can be well performed; and, accordingly, in all my practice I have met with no cases of inflamed stomach, disordered digestion, and dyspepsia in all its forms, half so malignant as those which sprung from tight-lacing.

A sense of oppression and weight is always experienced about the breast when the corset is drawn very tight around the body; the breathing is short, quick, and panting; and not only is the blood prevented in a great measure from undergoing that change in the lungs by which it is adapted to the healthy nourishment of the various organs, but the actions of the heart are also impeded: violent palpitation of the latter is not unfrequently produced, accompanied by a sense of vertigo, and occasionally fainting. When the corset is worn constantly from early youth, the growth of the ribs is prevented, and the whole capacity of the chest is permanently contracted: and hence spitting of blood, difficulty of breathing, or even more dangerous and fatal diseases of the lungs and heart, are induced.

Consumption is a very common complaint, the production or aggravation of which may be traced to tight lacing. But it is not merely to the chest that the injurious effects of the corset are confined: it likewise compresses the whole of the upper portion of the abdomen, and, by the yielding nature of this portion of the body, the pressure upon the organs within is even more considerable than that experienced by the heart and lungs. The liver, the stomach, and the intestines, in particular, experience this pressure to a very great extent: in consequence, the free and healthy secretions of the liver are prevented from taking place, the stomach and the bowels can no longer perform their functions with proper vigor and regularity, the digestion of the food is impeded, and the bowels become costive and distended with wind. In this manner, in connexion with the injury inflicted upon the lungs, the vigor of the whole system becomes prostrated from the use of corsets; the skin assumes a sallow hue, the countenance a haggard and wrinkled appearance, and all the functions of life are performed imperfectly. It is a fact, that nothing is better adapted to produce the premature decay of beauty, and the early appearance of old age, than the use of the corset.

There are two other effects produced by this article of dress, which would be sufficient of themselves to induce every prudent and sensible female to abandon it. The first is, the injury inflicted upon the breasts, by which their proper development is prevented, and the nipple is almost entirely obliterated, so that, when called upon to fulfil the sacred office of nurse toward her offspring, the mother finds, to her



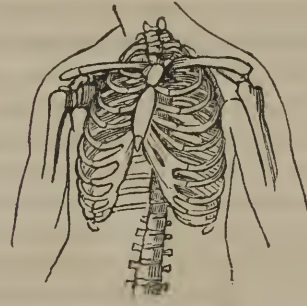
(FIG. 1.—UNNATURAL FORM.)



(FIG. 2.—NATURAL FORM.)



(FIG. 3.—COMPRESSED WAIST.)



(FIG. 4.—NATURAL WAIST.)

sorrow, that, from her folly, she has totally incapacitated herself from performing its duties or experiencing its pleasures. The second effect is that produced by the pressure of the corset upon the pelvis and the womb, more especially when worn in early youth or during the first stages of pregnancy. From this cause, barrenness, miscarriages, or a stunted and deformed offspring, may result, or the pains, the difficulties, and the dangers of child-birth may be increased to a frightful degree.

The injuries inflicted by compression of the vital parts are too numerous to be here recounted. Impaired digestion, obstructed circulation, pulmonary disease, and nervous wretchedness, are in their train.

A physician, distinguished by practical knowledge of the Protean forms of insanity, asserted that he gained many patients from that cause. Another medical gentleman of eminence, led by philanthropy to investigate the subject of tight-lacing, has assured the public that multitudes annually die by the severe discipline of busk and corset. His theory is sustained by collateral proof, and illustrated by dissections.

REMEDY.—The only remedy, as for ardent spirits, is total abstinence. As soon as the corsets are removed, the spine becomes weak from want of its customary support—the muscles having lost their action from want of proper exercise. This debility must be fought against. The corset must be left off for several hours every day, and for a longer and longer time daily. While it is off, the body must be rubbed briskly, and as hard as can well be endured, for ten or fifteen minutes at a time, with a coarse towel or flesh-brush; and the patient must ride on horseback, or walk till somewhat fatigued, keeping as erect as possible. The rubbing should be done by the patient as far as practicable, and then by a friend. When the corset is again put on, it should be made no tighter than is absolutely necessary to support the frame; and the degree of tightness should be lessened every day—as it readily may be—while the muscles regain their strength. After dry rubbing for some days, it may be well to apply cold water with a sponge or the hand, and then rub dry with the coarse towel.

This plan, pursued for a few months—perhaps even for six weeks—will cause the wasted muscles to swell and strengthen so, that the corset may be laid aside altogether—as it should be the moment it can be spared.

Mrs. Mary S. Gove, who has written an interesting and useful treatise on anatomy and physiology, has the following observations on tight-lacing: “I speak of that worse than heathen abomination, tight-lacing. Truly it is far more to be deprecated than the hook with which the wretched inhabitants of Hindostan pierce their flesh, and thus suspend themselves in the air, the victims of a cruel superstition. The suffering and death produced in this way are not to be compared with the misery and death arising from compression. Injuries to those bones which guard the heart and lungs are almost as fatal as injuries to those which guard the brain. The breast-bone may be made to press inward upon the heart in such a manner as to burst it: but more commonly the poor sufferer dies a slow and miserable death, worn out by anxiety and oppression, fainting, palpitations, anxious breathings, quick and interrupted pulse, still more frequent faintings, terminating fatally !”

Some idea may be formed of the injurious habit of tight-lacing, from the great contrast of the preceding figures: fig. 1 shows the absurd appearance of a female with corsets, in which the vital parts are much compressed; fig. 2 represents the natural and healthy form, as designed by Nature; fig. 3 is the waist in a compressed state; fig. 4, the natural appearance of the waist.

SECTION III.

FOOD AND DRINK.

THE circumstances which, among the middle and higher classes, are most influential in impairing the fitness of the parent for the duties of a nurse, are precisely those which deteriorate the general health, viz., neglect of exercise; confinement in overheated, close rooms; the exclusion of wholesome air during the night by closely-drawn bed-curtains or small bedrooms; the relaxing effect of soft feather-beds; dissipation of mind, or the absence of any serious or healthful interests or occupation; indulgence in late hours night and morning, and in passion and caprice of temper; *eating more than the system requires*, or the stomach can digest; drinking unseasonably or too largely of strong tea, malt-liquors, or other liquids; living in a bad situation; inattention to the state of the skin, and to proper and sufficient clothing; excessive novel-reading, &c. And, while such causes as these are left in unheeded operation, the mother has herself to blame, and not Nature, if she finds her bodily functions thereby disordered to such an extent as to deprive her of the power of nursing her offspring.

It is from overlooking the necessity, on the part of the mother, of a rigid observance of the laws of health, that the flow of milk is often greatly lessened or even arrested in a country nurse suddenly transplanted into town. Accustomed to open doors, a constant free circulation of air, much bodily activity, and the healthy digestion of a moderate meal, the nurse is suddenly transferred to a warm room, whose well-fitted windows and doors exclude the fresh air, and where, although she has no longer any direct call to active exertion to excite a natural appetite for food, she is nevertheless encouraged to eat largely and frequently, and often to indulge in the use of stimulants to which she has never been accustomed. Is it wonderful, that, under such circumstances, the digestive powers should give way, and the bowels become disordered, the general system deranged, and the secretion of milk either deteriorated in quality, or altogether stopped? Or, rather, could human ingenuity devise a more likely means to impair it, were such the aim we had in view?

A favorable state of the general health being the chief condition required to constitute a good nurse, every mother who wishes to suckle her own child, ought, then, to adhere scrupulously to that mode of life which experience has proved to be conducive to her welfare. Consequently, when a healthy country woman, who has always been accustomed to plain fare and active exertion in the open air, is removed to town to take charge of a child in a higher rank of life, the more steadily she adheres to her former habits, the more certainly will her health and value as a nurse be preserved. It is true that, while nursing, an increased expenditure, requiring a proportionate supply, takes place. But nature contributes to the necessary adjustment, by generally suppressing the customary monthly discharge during that period, and occasionally also by a certain increase of appetite, which may be safely indulged by a moderate increase of simple and nourishing food. But this excitement of appetite ought never to be converted into an excuse for indulging, as is often done, in a richness and variety of diet, which seldom fail to derange the health of the nurse, and impair the quantity and quality of the milk.

If any mother who may happen to read these pages should still remain unconvinced of the propriety of adhering to a simple and unstimulating diet while acting as a nurse, I would earnestly direct her attention to the unquestionable fact that the best and healthiest nurses are to be found among women belonging to the agricultural population, who, although actively employed, and much in the open air, scarcely ever taste of fermented liquors of any kind, but live principally on soups, tea, and vegetable and farinaceous food. Among mothers so circumstanced, it is rare to meet with one who experiences any difficulty in nursing her child, and many of them have milk enough for a second infant. This result is of itself sufficient to prove that the best supply of healthy milk is to be derived, not from a concentrated and highly nutritious diet, but rather from one consisting of a due proportion of mild vegetable, farinaceous, and liquid food, with a moderate allowance of meat and stimuli.

"Evidence to this effect," says Dr. Bell, "is readily furnished by any physician who is a professional adviser to mothers. Among the latest and most positive, on this head, is a communication in the '*London Lancet*,' of February 8, 1840, from Mr. A. Courtenay, surgeon. This gentleman informs us that he has resided in Ramsgate during nearly eight years, and has in that time attended 1,127 mothers in child-bed. He invariably found that, 'other circumstances being equal, those mothers who never tasted malt-liquors, wine, or spirits, during and subsequent to the period of labor, have had the easiest labors, the earliest recoveries, and the best health afterward. Nay, more,' continues Mr. C., 'I know several mothers who never could nurse their children under the ale and porter system, without suffering greatly in health, but who, after relinquishing the use of those baneful stimulants, have experienced a perfect freedom from disorder during lactation. Nor was this all: the offspring of such mothers have enjoyed an unprecedented immunity from disease also.' After some remarks tending to show that no mother is ultimately-exempt from the effects of this stimulating regimen, Mr. Courtenay gives additional testimony against it in the following language: 'I have under my own eye many mothers who are experiencing the ill effects of the moderate (not the immoderate) use of these falsely-denominated "strengthening" beverages, in the form of liver and stomach complaints, skin-diseases, asthma, dropsy, &c., and every impartial and observant member of the profession must have noticed similar results. Thousands of children

are annually cut off by convulsions, &c., from the effects of these beverages acting through the mother.'

"Mr. Courtenay very properly observes: 'Strong drinks excite a feverish state of the body, and create an artificial thirst—a thirst which is not expressive of any real want of the constitution, but a certain proof that the want does not exist. The greater the craving for them, under these circumstances, the more certain we may be that they are not needed, and that they will cause positive mischief to both mother and child. The constitutions of both are stimulated beyond what nature ever intended that they should be. The laws which govern the animal economy are positively infringed, and it is impossible that either mother or child can escape the penalty of that infringement. Both will suffer to a certainty in some shape or other; if not immediately, at a future period.'"

As regards the quality of the milk, there can be no doubt that a mild diet is of great advantage. The milk derived from the use of concentrated food is too thick, rich, and stimulating, for most infants. In the case of the cow, we have direct evidence of the quality of the milk being immediately influenced by a change of diet. The same thing occurs in the nurse; and hence the necessity of regulating her diet according to the state of the child.

Supposing the health of both mother and child to continue good, and the supply of milk abundant, no pretence whatever can exist for giving any other food, till the teeth begin to appear; because, till then, Nature has denied the organization required for the proper digestion of other substances. This truth is now much more generally acted upon than formerly. Wanting faith in the sufficiency of God's arrangements to effect his own purposes, both medical men and mothers used to advise the addition of gruel, arrowroot, or some other farinaceous food, almost from the first month; and the common results were, impaired digestion, and a greater liability to convulsions and other diseases, of irritation, especially during the time of teething.

But now, a better acquaintance with the laws of the animal economy, joined with a more implicit reliance upon the wisdom and benevolence of the Creator, has at last convinced us that the more closely we adhere to the path which God has marked out for us, the more successful shall we be in rearing the young. If, indeed, we bear constantly in mind that the great mortality in infancy is not a part of the scheme of Providence, but arises chiefly from removable causes, and has already diminished as our knowledge has advanced, we shall become more and more anxious to discover and fulfil the laws of the infant organization, as the surest way of benefiting and preserving the child.

Unfortunately, however, mothers and nurses are sometimes unable to supply a sufficiency of milk for their infants; and it then becomes a question how the deficiency is to be supplied. Where the mother is healthy, and the milk is of good quality, but merely insufficient in quantity to constitute the sole sustenance of the child, the balance is decidedly in favor of her continuing to suckle, and giving some mild supplementary food. The infant will generally thrive better by following this plan than by an entire change of nurse. But if the deficiency proceeds from impaired health in the mother, or any other cause likely to injure the nursling, the substitution of another breast is clearly indicated; and the sooner the change is made, the better for both parties.

Where additional nourishment is required, the principle for its right selection is, to procure the kind most nearly allied in its nature to the mother's milk. Some experienced men recommend goat's and others ass's milk as an excellent substitute, and either will generally answer remarkably well. When neither can be obtained, fresh or boiled cow's milk, diluted with one third or one half of tepid water according to the age, and slightly sweetened, may be given with great advantage. If it is found to agree, nothing else need be tried till the appearance of the front teeth indicates the propriety of a change. But when, as occasionally happens, it proves too heavy, and gives rise to frequent vomiting, acidity, flatulence, and gripes, it must not be persevered in, but recourse must be had to thin barley-water, arrowroot, or panado, slightly thickened according to the age, constitution, and circumstances, at the time. Sometimes, when diluted milk disagrees, the addition of a small quantity of any farinaceous substance, such as rusk, arrowroot, or well-baked bread, cut into slices and toasted almost to dryness, and boiled in

a small quantity of water to which milk is afterward added, obviates every inconvenience, and restores the evacuations to their healthy state.

It sometimes happens that, notwithstanding every attention, the inability of the mother to nurse her child becomes so decided, as to render it imperative on her to desist from the attempt, and to procure a substitute. I shall now, therefore, consider the qualities by which the choice of a nurse ought to be determined.

SECTION IV.

CHOICE AND PROPERTIES OF A NURSE.

THE selection of a nurse being generally confided to, or at least sanctioned by, the medical attendant, it is unnecessary to discuss *all* the qualities which ought to be deemed indispensable. Sound health, a robust constitution, freedom from any hereditary taint, cheerfulness and presence of mind, orderly, neat, and temperate habits, patient kindliness and good-humor, and, above all, a strong and innate liking for children, are of the first importance. If the child be unusually predisposed to any disease, a nurse characterized by a similar predisposition ought on no account to be chosen; and a strict investigation of this point is a duty incumbent on the professional man. For the same reason, violence of temper, extreme nervousness of disposition, intemperance, want of truthfulness, inattention to order and cleanliness, and other moral defects, ought to be held as insuperable obstacles to the selection of any woman in whom they are conspicuous.

"An irritable, passionate, and sour-tempered female," as is justly remarked by Eberle, "is but ill-suited for this important duty. Not only is the child liable to be maltreated by a nurse of this character, during the fits of ill-nature and passion, but the most serious and alarming effects may be produced on its tender organization by the milk of such a nurse. It is well known that violent anger and habitual sourness of temper are peculiarly apt to give a pernicious quality to the milk. Children have been thrown into convulsions by suckling soon after the nurse has been agitated by violent anger or rage; and alarming vomiting and purging are particularly apt to occur from this cause. Indeed, every inordinate excitement or depression of the mind is unfavorable to the secretion of healthy milk. Protracted grief, sorrow, or mental distress and anxiety, in the nurse, seldom fail to produce a prejudicial effect on the health of the nursling. Women, consequently, whose domestic relations expose them to moral affections of this kind, can not be regarded as well adapted for this office. Tranquillity of mind and evenness of temper are particularly desirable in a nurse, and no female ought to be admitted to this duty who is, either by temperament or extraneous circumstances, placed in an opposite condition."*

The destructive influence of passion in the mother or nurse on the system of the child, is strikingly illustrated in a case mentioned in the excellent little work of Dr. Von Ammon, physician to the king of Saxony:† "A carpenter fell into a quarrel with a soldier billeted in his house, and was set upon by the latter with his drawn sword. The wife of the carpenter first trembled from fear and terror, and then suddenly threw herself furiously between the combatants, wrested the sword from the soldier's hand, broke it in pieces, and threw it away. During the tumult, some neighbors came in and separated the men. While in this state of strong excitement, the mother took up her child from the cradle, where it lay playing and in the most perfect health, never having had a moment's illness; she gave it the breast, and in so doing sealed its fate. In a few minutes the infant left off sucking, became restless, panted, and *sank dead on its mother's bosom!* The physician who was instantly called in found the child lying in the cradle as if asleep, and with its features undisturbed; but all his resources were fruitless. It was irrecoverably gone."

* Eberle on "Diseases of Children," p. 35.

† "Die ersten Mutterpflichten und die erste Kindespflege," p. 102; third edition. Leipzig, 1839.

It is seldom that so remarkable a case occurs in private life ; but there are unfortunately many in which perpetually recurring fits of ordinary bad temper, especially near or during the time of suckling, produce similar effects in a more slow and gradual manner, but with almost equal certainty ; and if anything can exert a salutary influence on mothers who are prone to the indulgence of passion, it must be the contemplation of such a case as that of the carpenter's wife.

Another strong reason for rejecting a nurse characterized by a bad temper or other moral deficiencies is, the general system of mismanagement and concealment in other respects which is sure to ensue, and which it is sometimes so difficult for the mother to detect, that the health of the child may be ruined without any one being able to discover why it is suffering at all. We can not, therefore, attach too great importance to moral character in the first selection of a nurse ; for every change is attended with serious inconvenience, and, when deceit is once practised, confidence can never be restored.

But of all the defects which a nurse can have, none is more directly destructive of infant life than that in which many mothers, as well as nurses, indulge, of administering, of their own accord, strong and dangerous medicines to children. Not to mention the thousands of cases in which health is injured by the injudicious use of medicines in infancy, it appears, from a late return, printed by order of the house of commons, of all inquests held in England and Wales in 1837 and 1838, in cases of death from poison, that 72, or nearly one seventh of the whole number, resulted from carelessness of mothers and nurses in administering medicines with the properties of which they were not acquainted, in doses far beyond those in which they are ever prescribed by medical men. The return shows, for example, that the deaths of very young children (most of them at the breast) from opium or its preparations, were 52 ; and from opium or laudanum, given by mistake for other medicine, 20 more. Mr. Browne, the coroner for Nottingham, adds that a celebrated quack "cordial"* for children destroys great numbers yearly in that borough, but, as they die off gradually, the cases do not come under his official notice.†

In addition to cases of absolute poisoning of the above description, it is well known to practitioners that much havoc is made among infants by calomel and other medicines, which procure momentary relief, but end by producing incurable disease : and it has often excited my astonishment to see how recklessly remedies of this kind are had recourse to, on the most trifling occasions, by physicians, mothers, and nurses, who would be horrified if they knew the nature of the power they are wielding, and the extent of injury they are inflicting.

Whenever a child shows any symptom of uneasiness, instead of inquiring whether it may not have been caused by some error of regimen, which only requires to be avoided in future to remove the suffering, many mothers act as if it were indispensably necessary to interfere immediately and forcibly with the operations of Nature, by giving some powerful medicine to counteract its effects ; and if relief does not ensue within an hour or two, the dose must be repeated ! In this way, it is not uncommon for a medical man to be sent for in alarm, and told that the child began to complain at such a time ; that *notwithstanding* that a large dose of calomel, or laudanum, or tincture of rhubarb, was immediately given, and repeated every hour or two, it is still very ill, or becoming hourly worse ; and that, if he can not *do something* instantly, it will soon be beyond recovery. Whereas, it may appear on examination, that there was at first only a slight indisposition, which required no active treatment at all, and that the urgent symptoms are those caused solely by the intended remedies.

That there are cases of diseases in which very active means must be promptly used to save the child, is perfectly true. But it is not less certain that these are cases of which no mother or nurse ought to attempt the treatment. As a general rule, indeed, where the child is well managed, medicine of any kind is very rarely required ; and if disease were more generally regarded in its true light, not as a something thrust into the system, which requires to be expelled by force, but as an aberration from a natural mode of action produced by some external cause, we should be in less haste to attack it by medicine, and

* Godfrey's. Twelve deaths of children from this cordial are recorded in the returns ordered by the house of commons, referred to in the text.

† Chambers's Journal, No 420, p. 32.

more watchful, and therefore more successful, in our management and in its prevention. Accordingly, where a constant demand for medicine exists in a nursery, the mother may rest assured that there is something essentially wrong in the treatment of her children.

SECTION V.

WEANING.

As a general rule, a child should be weaned at the age of twelve months; and the summer, or hot season, is not so favorable as at other periods, there being such a tendency to bowel-complaints, which may be induced by a change of diet. There may be exceptions to this rule in cases where the infant is weakly or sickly. Where the mother, however, is laboring under any disease—particularly if it be constitutional—the child should either be weaned immediately, or never allowed to nurse: as it is in this manner, by living on diseased blood under the name of milk, that so many affections are transmitted, such as consumption, scrofula, venereal disease, &c. This is a very important subject, and should engage the deep interest of parents.

A good method is, to wean the child by degrees: that is, let it nurse a portion of the time, and occasionally give it food. In cases where the infant is taken from the breast immediately, or soon after birth, the best food for it consists in substituting fresh country-cow's milk, given tepid, diluted with one half or one third water, and slightly sweetened. When the teeth appear, bread (at least one day old) may be mixed with the milk.

There are many causes which render mothers unfit for nursing their children, most of which are pointed out by Combe in his treatise on the "Physiological and Moral Management of Infancy." He remarks as follows:—

"The time of weaning ought to be determined chiefly by two circumstances, viz., the health and state of the mother, and the development and health of the child. When the health of the mother continues perfect, and the supply of milk abundant, weaning ought not to take place till the development of the teeth shows that a change of food is required. This usually happens about the ninth or tenth month; but in delicate children teething may be delayed for even several months longer, and, in such a case, weaning ought not to be effected so soon.

"If, however, the supply of milk proves insufficient for the nourishment of the child, and the health of the mother begins to suffer before the expiration of the usual time of nursing, it may become necessary, for both its sake and her own, to wean it gradually before any indications of teething present themselves. But, in this case, weaning is recommended, not as proper in itself, but merely as the smaller of two evils. To continue nursing under such circumstances, would lead to more mischief than if it were given up. In some countries, nursing is continued for eighteen months or two years; but unless in very feeble or ill-constituted children, this is an unnecessary prolongation of the process. In weak, scrofulous children, however, the teeth are often very late in appearing, and this may be taken as a sure sign that the breast ought still to constitute the chief source of their nourishment, whatever their age may be.

"The grand rule in weaning is, to accustom the child gradually to the use of other nourishment, and to withdraw the breast from it by equally slow degrees. Formerly, the transition used to be made suddenly, to the direct injury of both mother and child. Now, however, it is accomplished in such a gradual manner, that many sustain no inconvenience from it. If, when the front teeth begin to appear (about the sixth or seventh month, for example), some light food be given once or twice a day, and the quantity be afterward gradually increased and repeated so as to lessen the appetite for the breast in an equally gradual manner, weaning will become comparatively easy and safe for both mother and child. But if the suckling be suddenly put a stop to, the mother will suffer from the suppression of the usual secretion, and the infant from the rapid change to an unaccustomed diet. On this latter account, weaning ought never to

be effected while the infant suffers under the irritation of teething or any active disease, as the risk of convulsions or serious intestinal disorder will be thereby greatly increased.

"After the child has been weaned, its principal nourishment ought still to consist of liquid or semifluid substances. Milk; milk boiled with bread, or slightly thickened with rice or wheat flour; rice; preparations of arrowroot, tapioca, or sago; oatmeal-gruel, and pulverized crackers dissolved in warm water with a little milk and sweetened—should constitute the principal nourishment until the eye-teeth or fangs have made their appearance. Along with these fluid alimentary substances, small portions of bread, bread and butter, and weak and simple liquids, may be allowed occasionally with perfect propriety. It is particularly important to guard against too full and nourishing a diet immediately after the weaning has been accomplished. Though gradually brought, in the way just stated, to bear the simpler kinds of solid nourishment when taken at distant intervals, the stomach is readily oppressed and disordered at this period, if the transition to a substantial diet be abrupt."

SECTION VI.

BATHING.

In infancy, cleanliness is of the first importance to health. Not only is the skin extremely delicate, sensitive, and easily injured, but it is the seat of a continual *excretion* or *exhalation* of waste matter, in the form of perspiration, often exceeding in quantity that from the bowels and kidneys united. This perspired matter consists of solid and of fluid parts; and, according to Thenard, is composed of much water, a small quantity of acetic acid, common salt, muriate of potassa, some earthy phosphates, and a very small quantity of animal matter.

But, in addition to this, a secretion of an oily matter takes place on the cutaneous surface, having for its object to keep the skin soft and pliable, and also, in some degree, to protect it from injury. This secretion is most abundant on the scalp, in the arm-pits and folds of the joints, and also on the forehead and nose, and it has a peculiar smell, by which it is easily distinguished. It is this oily secretion which prevents the hair from becoming dry, and which causes water applied to the skin to gather into globules, exactly as when applied to any oiled surface. In the folds of the skin, it serves to prevent the two contiguous surfaces from irritating or adhering to each other, as, from their mutual friction, they would otherwise be apt to do.

In adult age, the oily secretion above described has, in some constitutions, a strong disagreeable smell, particularly in situations where it is abundant, as in the arm-pits, and also in some savage tribes and in the negro. But in infancy it rarely exceeds in quantity what is absolutely required to preserve the softness and pliability of the skin, and, during health, never gives rise to any unpleasant odor.

At the usual temperature of the body, the fluid part of the perspiration escapes, and mingles with the air in the form of vapor, while a considerable portion of the solid or saline ingredients is left adhering to the skin and clothes, both of which it speedily dirties. The vapor, not being visible, is little thought of in estimating the effects of perspiration; but its reality and active properties become very apparent when it is allowed to accumulate from a number of persons congregated for hours in close rooms, especially on a warm day, or is condensed in the tissue of a dress not duly changed. We may easily recognise its presence, also, on entering an unventilated bedroom in the morning from the open air; and we are not equally sensible of it during the day, merely because it is diffused through the atmosphere almost as fast as it is formed.

When the impurities thrown out by perspiration are allowed to remain long in contact with the skin, they become a source of irritation, and, by obstructing its pores, necessarily impede any further exhalation. The consequence is, that the waste matter, deprived of its usual free outlet, is either partially

and hurtfully retained in the system, or makes its egress by some other channel, such as the bowels, kidneys, or lungs, at the risk of producing disease in them by the over-excitement of their functions. At other times, the skin itself suffers, and becomes the seat of troublesome and obstinate eruptions.

Such being the source and extent of the impurities to which the surface of the body is exposed, and such their effects when not duly removed, it will not appear surprising that cleanliness is one of the chief conditions of health at all periods of life, and especially in infancy. We have now, therefore, to consider by what means this condition may be most safely and effectually fulfilled.

Keeping in view the composition of the perspired matter, we must provide, first, for the ready escape of the invisible vapor which forms so large a portion of it; and, secondly, for the frequent removal of the solid saline residue left in contact with the skin. The first purpose will be completely effected by using a dress of light and porous materials not too tightly fitted to the body, and by frequently changing it. The second will be best fulfilled by frequent and regular ablution with tepid soap-suds, and subsequently applying clear water. On all ordinary occasions, ablution or bathing the surface with pure soft water is to be preferred.

The whole surface of the body, and especially the folds of the skin and joints, should be carefully washed with a soft sponge, so that every vestige of impurity may be removed. The infant should then be quickly but gently rubbed dry with soft napkins, and afterward with the hand, and carefully dressed. The best times for washing the infant are, in the morning as soon as it is taken out of bed, and in the evening before being put to sleep.

On account of the great susceptibility of cold which exists in infancy, and the difficulty with which the system resists the influence of any sudden change, the temperature of the water ought, at first, to be nearly the same as that of the body, namely, about ninety-six or ninety-eight degrees Fahrenheit. Says Bell, "When there is not a thermometer at hand, I always direct the mother or attendant to immerse her *arm* in the bath, by which she can judge pretty accurately of its temperature." The younger the infant, the more rigidly should this standard be adhered to; and it is not till after growth and strength have made some progress, that it becomes safe to reduce the temperature by a few degrees.

In addition to the regular morning ablution, the tepid bath may if necessary be repeated every evening for a few minutes. Properly managed, and not too warm, it has the double advantage of soothing the nervous system, which is always irritable in infancy, and of sustaining an equable circulation of the blood toward the surface, and thus warding off internal disease. It ought not, however, to be either too long continued or used in a cold room. With these precautions, the most unequivocal advantage often results from its use, especially in scrofulous and delicate children. For restless and irritable children, also, the evening bath is often of immense advantage, from the quiet and refreshing sleep which it rarely fails to induce. As a sedative, too, it is of great value in subduing nervous excitement. Bathing also renders the child less liable to a check of perspiration, which causes so many diseases. But when used too warm, or continued too long, the bath is apt to excite undue perspiration, and to increase the liability to cold.

Some physicians and parents prefer the cold to the tepid bath even for infants; but reason and experience concur in condemning it; and it is only when the infant is strongly constituted, that it escapes from the use of the cold bath unhurt. After the lapse of a few months, the temperature of the water used for the morning ablution may with propriety be gradually reduced, provided the child continues healthy and the season of the year is warm. But to make any sudden change in winter, or where considerable delicacy exists, would be attended with risk.

Another important element of cleanliness in infancy is, the immediate removal of every soiled or damp portion of the dress, and the careful washing from the skin of every vestige of impurity arising from either of the natural evacuations. In early infancy, the discharges from the bowels and bladder are frequent and involuntary; but after a short time, an attentive nurse can generally discover some indications of what is about to happen, and take measures accordingly. It is surprising how early regularity in this respect may be introduced by a little care and attention.

SECTION VII.

AIR AND VENTILATION.

WE have only to contrast the blanched and feeble appearance of children inhabiting the dark and narrow streets of a crowded city, with the rosy freshness of those of the same classes residing in the suburbs or in the country, to obtain a pretty correct notion of the importance of a well-selected locality.

Considering the susceptibility of the influence of cold in early infancy, I need hardly add that a high and bleak situation, or one exposed to the full force of the north and east winds, is equally unfavorable, and ought to be carefully avoided.

Cellars are damp and unhealthy. In selecting rooms for a nursery, those which have a southern exposure ought to be preferred, for the reasons already mentioned when treating of the locality. That a nursery ought also to be *large, airy, easily warmed, and easily ventilated*, will, I think, be readily admitted; for, without such conditions, it is evidently impossible to surround the infant with that pure and renovating atmosphere which is indispensable to health.

In one respect, pure air is even more essential to the formation of good blood than supplies of proper food. The influence of the air we breathe *never ceases for a single moment of our lives*, while that of food recurs only at intervals. By night and by day, respiration goes on without a pause, and, every time we breathe, we take in an influence *necessarily* good or bad, according to the quality of the air which surrounds us. No wonder, then, that a cause, thus permanently in operation, should, after a lapse of time, produce great changes on the health; and no wonder that attention to the purity of the air we breathe should amply and surely reward the trouble we may bestow in procuring it. Accordingly, of all the injurious influences by which childhood is surrounded, few indeed operate more certainly or extensively than the constant breathing of a corrupt and vitiated air: and, on the contrary, few things have such an immediate and extensive effect in renovating the health of a feeble child, as change from a vitiated to a purer atmosphere.

Vitiated air and bad food are the two grand sources of that hydra-headed scourge of many countries—*scrofulous disease*; and either of them, in a concentrated state, is sufficient to produce it, without the co-operation of the other: but when both are combined, as they often are among the poor in our larger towns, then scrofula, in its worst form, is the result. Accordingly, we can produce scrofula in the lower animals at will, simply by confining them in a vitiated atmosphere, and restricting them to an impoverished diet.

Scrofula, in one or other of its numerous forms, is acknowledged to be in Great Britain (and possibly in the United States) perhaps the most prevalent and fatal disease which afflicts the earlier years of life. It is the most usual cause of glandular obstruction, defective nutrition, affections of the joints, and other morbid conditions, which either give rise to, or greatly aggravate the danger of many other diseases—such as consumption, measles, whooping-cough, fever, teething, and convulsions; and in this way it proves fearfully destructive of life. But so powerful is the continued breathing of a cold, damp, and vitiated atmosphere in producing it, that where such a cause is allowed to operate, the most promising combination of other conditions will often prove insufficient to ward off the evil. Sir James Clark expresses the conviction that living in an impure atmosphere is even more influential in deteriorating health than defective food, and that the immense mortality among children reared in workhouses, is ascribable even more to the former than to the latter cause.

So long ago as 1810, Mr. Richard Carmichael, of Dublin, in an excellent little treatise on scrofula, drew the attention of the medical profession to this cause, and, on the strongest evidence, denounced the great impurity of the air in the Dublin house of industry as the grand cause of the excessive prevalence of scrofula among the children at the time he wrote. In one ward, measuring sixty feet by eighteen, and of very moderate height, there were *thirty-eight* beds, each containing *three* children, or 114 children in

all. When the door was opened in the morning, the matron found the air insupportable, and, during the day, the children were either in the same ward, or crowded to the number of several hundreds in a schoolroom. Keeping in mind the necessity of pure air to the formation of healthy and nutritive blood, we can scarcely feel surprise that scrofula was extremely prevalent under circumstances so calculated for its production.

In the Dublin lying-in hospital, formerly, the influence of vitiated air caused fatal convulsions in thousands of the infants for year after year, till the cause was at last discovered and obviated, and the mortality consequently reduced from every sixth child, within the first nine days, to only *one in every twenty*, on an average of five years! To these striking facts I here refer, because it is by such extreme cases that the reality of the cause is demonstrated beyond the possibility of doubt, and that the attention of reflecting but ignorant minds is most powerfully arrested.

Keeping these facts in view, it will be obvious that, especially where there are several children, the rooms appropriated for their use should be considerably elevated above the ground, large, cheerful, lofty in the ceiling, not over-crowded with furniture, and provided with the means of ample ventilation, without exposing their inmates to currents of cold or damp air. Instead of these conditions being generally fulfilled, however, it is common even among the middle classes to find some wretched apartment at the top or bottom of the house selected as a nursery, although possessed of no convenience for the purpose; while one or two large and excellent rooms are set apart to be used perhaps twice or thrice a year for the reception of strangers, for whom, in their hearts, the parents care nothing, and to whom the size or position of the apartment in which they spent the few nights of their stay, would, at the worst, be of very little moment.

From pure ignorance on the part of the parents, it is also a common practice, not only to crowd several children and one or two nursery-maids into a small room, but to allow cooking, washing, and other household operations connected with the nursery, to be carried on in it. Nothing, however, can be more injudicious, or more directly at variance with the duty of parents to promote to the utmost the welfare of their offspring. No mother ought to be satisfied with herself until, in obedience to the wants of the infant organization, she has provided for her children the most suitable and best-aired nursery within her power, and strictly prohibited every kind of operation by which its atmosphere can be vitiated or its cleanliness impaired.

When persons faint in the vitiated atmosphere of a crowded theatre, nothing further is required to restore animation than to carry them out into a purer air. Here everybody at once recognises the difference between the sustaining power of a pure and that of a contaminated atmosphere. In infancy, the difference is often exhibited in an equally striking degree. The wailings and convulsions which infants, brought up in a heated and confined air, often experience from any slight irritation, yield more readily to the free admission of a pure and refreshing air, than to any other single appliance, while they often resist the most vigorous treatment when, from fear, pure air continues to be excluded. I knew a remarkable instance of this kind, where a well-constituted child passed within a few minutes from a state of spasmodic irritation and twitching, bordering on convulsions, to perfect health and good-humor, simply by the admission of fresh air into a very close, ill-ventilated nursery, in which even the fire was half extinguished for want of air to keep it alive.

Those whose attention has never been specially directed to the subject, can have no idea of the extent to which this cause of bad health in the young is left in operation among even the middle classes of society, and much more from ignorance than any unavoidable necessity. I have seen many examples of this, but the most striking which I have met with was in a very large family, in which scrofula raged with an intensity almost exactly proportioned to the degree of vitiation of the air in which its several members lived. The first-born children escaped altogether, because, in their day, the nursery and bedrooms were of course least crowded, and it was easier to have the occupants much in the open air; but afterward, when five or six young people, and the nursery-maids, lived and slept in one room of very moderate dimensions, in which cooking and washing were carried on, and two more in a small, ill-aired

bed-closet adjoining, every one of them suffered severely from the disease. The bad air not being suspected to have any share in the result, no attempt was made to improve it by adequate ventilation even during the day ; and, in consequence, all the medical treatment and means resorted to served only to retard the progress of the scrofula, but without being able to cure it. In this way, the younger members of the family suffered under it for several years, and, in a large proportion of them, it was either directly or indirectly the cause of death. If one half of the expense incurred for medical attendance and sea-bathing had been devoted from the first to removing the original cause, and procuring a permanent supply of fresh air, a vast amount of anxiety and suffering might have been saved to all, and to none more than to the fond parents, who could only mourn over a fatality which they never imagined it possible to prevent.

When the weather is cold and damp, the windows ought never to be thrown open till the children are removed, and the sun has been for some time above the horizon. The bedclothes ought to be turned down as soon as the child is taken up, and to be exposed to the air for several hours, that they may be entirely freed from the effluvia collected during the night. This point is, in general, too little attended to ; the appearance of order and neatness being generally preferred to the real welfare of the child. While due care is taken to insure an adequate temperature, every approach to overheating must be scrupulously avoided.

SECTION VIII.

EXERCISE.

IN infancy, motion of the body is as essential to health, and the appetite for it is as unequivocally manifested, as at any period of life. To regulate it properly, we have only to keep in view the state of the infant organization, and the laws under which the principal functions operate.

Such is the state of the constitution in the earliest months of existence, that it naturally follows that, for some weeks after birth, exercise should be of a purely passive kind, and that we should be in no haste to excite the child to premature exertion, or to place it in a sitting or erect position. If this precaution be neglected, and the child be carried in a sitting posture from the first, the soft and yielding spine will bend under the weight of the upper part of the body, and probably induce not only permanent deformity, but, as its necessary consequence, undue pressure upon the lungs, heart, and digestive organs, and disorder of their respective functions. Hence, in the beginning of life, exercise ought to consist simply in being carried about the nursery, or into the open air, in a horizontal or slightly-reclining position on the nurse's arms, or in a carriage ; and in gentle friction with the hand over the whole surface of the body and limbs, an operation which is not less agreeable to the infant than beneficial in promoting a free and equal circulation.

In *lifting* young children, the nurse should be very careful never to lay hold of them by the arms, as is sometimes thoughtlessly done ; but always to place the hands, one on each side of the chest, immediately below the arm-pits. In infancy, the sockets of the joints are so shallow, and the bones so feebly bound down and connected with each other, that dislocation may easily be produced by neglecting this rule. For the same reason, it is a bad practice to support a child by one, or even by both arms, when it makes its first attempts to walk. The grand aim which the child has in view is, to preserve its equilibrium, and it should be equally supported by the waist.

Great discretion requires to be exercised in the common custom of dandling, swinging, and jolting, very young infants. In a very moderate degree, such exercises seem to be agreeable to them, and need not be prohibited ; but, in the rough way in which they are sometimes indulged in, they can not but be prejudicial.

In fine weather, passive exercise in a child's carriage in the open air, and over a tolerable road, is very

salubrious ; and, as the infant can be laid at full length, and perfectly protected, it is an exercise attended with little fatigue, and quite unobjectionable after the first five or six weeks. But in cold weather it is not so suitable. In general, children are fond of it, but very rapid or rough motion ought to be avoided.

It is the swaddling, bandaging, stays, and forced exercise of modern civilization, and not the natural action of the body, which give rise to curvature of the spine and deformity of the limbs ; and hence such deviations are never met with among the Indians. "They do not swaddle their infants," says an old author in a tone of regret, when speaking of the Caribs, "but leave them to tumble about at liberty in their little hammocks, or on beds of leaves spread on the earth in a corner of their huts ; and, *nevertheless*, their limbs do not become crooked, and their whole body is perfectly well made."—"Although the little creatures are left to roll about on the ground in a state of nudity, they nevertheless GROW MARVELOUSLY WELL, and *most of them become so robust as to be able to walk without support at six months old.*"* This quotation shows, in a very striking manner, the superiority of the Creator's ways over those of man, and how implicitly we may rely on a successful result when we adapt our conduct to the law of God, instead of capriciously chalking out a course of our own not sanctioned by him.

The next stage of infant exercise is *walking* ; and here, again, provided we do not stimulate the child to premature efforts, we may safely trust to itself. After a child has acquired a certain degree of vigor and command over its muscles by crawling about, it will begin of its own accord to try to stand and walk by laying hold of chairs, or seeking a little support from the nurse. But we should be careful not to accustom an infant to rely too much upon others. In infancy, as in later life, the grand principle of education ought to be to promote SELF-REGULATED ACTION, whether of body or of mind, and to guide inexperience to the mode in which Nature intended the action to be performed. So long as we continue to be machines moved by the will and defended by the prudence of another, we can not, by possibility, possess the strength of bodily or mental endowment to which our constitution is naturally adequate ; and it is an entire mistake to suppose that this principle does not hold even from early infancy.

Imprudent exposure in the nursery or out of doors is a very common source of disease in the second year of infancy, against which provision may generally be made. Within doors, exposure to draughts of air, and to the damp of a recently-washed floor, are the most frequent exciting causes of this description, and, in delicate children, often give rise to inflammatory affections of the windpipe, chest, or bowels. Out of doors, injury is sometimes inflicted, especially in cold or damp weather, by allowing the child to remain inactive or lie down on the ground while the nurse is talking, or sitting down to read or work, instead of occupying herself with her proper charge. Playful activity is the proper remedy for this evil.

Sufficient exercise and pure air are indispensable conditions of health during the second year, and both conduce greatly to the safety of the child during the irritation of teething. In fine weather, the child can not be too much in the open air, exercising his muscles in his own way and at his own pleasure. If very young, and unable to walk, he may be laid down on the grass with a few toys around him, and allowed free scope with them. If the grass is not perfectly dry, a shawl or a piece of water-proof cloth should be spread over it. In the nursery, the child may be placed on a carpet for the same purpose. By self-exercise of this description, he will not only amuse himself better, but develop his muscular strength, and acquire the power of standing and walking, sooner and more securely than if attempted to be taught exclusively by another. Premature attempts at walking by the aid of an attendant ought to be strictly forbidden. When the child feels himself able for it, he will lose no time in exercising his powers ; and it is better that he should gain strength by crawling for a week or two longer on all-fours, than that his limbs or spine should become bent by premature exertion. Injudicious parents often consult their own vanity and pleasure much more than the child's happiness, by exciting him to the utmost to attempt to walk before the organization is sufficiently matured for the purpose ; and I can not help repeating, that it would be well for them to ascertain clearly whether their impelling motive is not simply *their own amusement*, before they seek to act upon it. If this were done, the child would frequently escape, where at present it is sure to suffer.

* "Histoire Naturelle et Morale des Isles Antilles." Rotterdam, 1658.

SECTION IX.

S L E E P.

WHEN the stomach is distended, and digestion just beginning, sleep is generally uneasy and disturbed. The infant, therefore, ought not to be put to rest immediately after a full meal. During the first month, it is true, he goes to sleep directly after having the breast; but he sucks little at a time, and the milk is then so diluted as scarcely to require digestion: it is at a later period that the precaution becomes really important.

So much must always depend on individual constitution, health, and management, that no fixed hours can be named at which the infant should be put to rest. If he sleeps tranquilly, and when awake is active and cheerful, and his various bodily functions are executed with regularity, we may rest assured that no great error is committed, and that it is a matter of perfect indifference whether he sleeps an hour more or an hour less than another child of his own age. Where, on the contrary, he sleeps heavily or uneasily, and when awake is either stupid or fretful, and his other functions are perverted, we may be certain that some error is committed, and that he is either rocked to sleep immediately after a full meal, or otherwise mismanaged.

There are few things which distress an anxious mother or annoy an impatient nurse more than sleeplessness in her infant charge, and there is nothing which both are so desirous to remove by the readiest means which present themselves. A healthy child properly treated, and not unduly excited, will always be ready for sleep at the usual time; and when it appears excited or restless, we may infer with certainty that some active cause has made it so, and should try to find out and remove it. If no adequate external cause can be discovered, we may infer with equal certainty that its health has in some way suffered, and that it is sleepless from being ill. In this case, the proper course is to seek professional advice, and to employ the means best adapted for the restoration of health, after which sleep will return as before. From not attending to the true origin of the restlessness, however, and regarding it merely as a state troublesome to all parties, many mothers and nurses are in the habit of resorting immediately to laudanum, sedative drops, poppy-syrup, spirits, and other means of forcing sleep, without regard to their effects on the disease and on the system; and are quite satisfied if they succeed in inducing the appearance of slumber, no matter whether the reality be sleep, stupor, or apoplectic oppression. The mischief done in this way is inconceivably great; and astonishment would be excited if it were generally known what quantities of quack "cordials," "anodynes," and even spirits, are recklessly given with the view of producing quiet and sleep. In Germany, milk mixed with a decoction of poppy-heads is in common use for this purpose; and Von Ammon mentions a case of a child of six months old, whose parents were at first delighted with the placid slumber induced by it, but in the morning were horrified on finding the body stiff, the extremities cold, the eyes turned up, the pulse nearly gone, and the surface covered with a cold sweat! Many an infant, the true cause of whose death was not always suspected, even by the guilty person, has thus passed prematurely to its grave.

Plants, flowers, and strong-smelling perfumes, ought to be wholly banished from the sleeping-apartments of children, as they act injuriously on their delicate nervous system. The German physician Kopp mentions a melancholy example, in which a child of fourteen days old was killed, apparently by the strong scent of sabine-oil diffused through the room, the father having rubbed his thigh very freely with it for rheumatism, in the close vicinity of the child's cradle. No other cause of death could be discovered, and, till then, the infant was perfectly healthy.

In infancy, as in adult age, it is highly conducive to health and sound sleep, that the night and bed clothes should be thoroughly purified by several hours' exposure to the air every day before the child is put to bed. The effect of perfectly fresh coverings is soothing and healthful in a high degree. The quantity of bedclothes ought to be quite sufficient to sustain the natural heat of the body, without being

so great as to relax or excite perspiration ; and for this reason a *soft*, yielding feather-bed is very objectionable, particularly in summer, or in a warm room. In infancy, there is a natural tendency of blood to the head : and where this is encouraged by warm caps, the consequences are often hurtful. The head, therefore, ought to be only lightly covered. When the infant is habitually restless, give catnep-tea, and bathe the whole surface with tepid water. — COMBE.

CHAPTER II.

INTELLECTUAL EDUCATION OF CHILDREN.

SECTION I.

FIRST IMPRESSIONS OF CHILDHOOD.

“THE intellectual education of children, until two years of age,” says Mrs. Barwell, “consists in preparing the senses for the reception of correct ideas of things. The rudiments of all learning are acquired by means of the sight, hearing, smell, touch, and taste ; as these increase in strength and activity, new ideas are gained, and new impressions made.”

The mind of an infant is at first much like a blank sheet of paper, and almost any impression can be made upon it, either good or evil—as intelligence or ignorance, prejudice or superstition—and these impressions are almost indelible. Hence the poet well says—

“’Tis education forms the common mind,
As the twig is bent, the tree is inclined.”

From this fact, we deduce the importance of teaching the infant mind correct principles and useful knowledge. It should be the constant solicitude on the part of the mother very early to instruct her offspring in everything which relates to its present and future welfare, according to its capacity. It is surprising how soon the intellect begins to unfold itself and comprehend things ; and this is the golden opportunity to present pleasing objects of diversion, and give sensible and moral illustrations. All nature is filled with them, adapted to every gradation and progressive development of the mind.

The only care to be expected from a young child is, abstaining from direct violence, and the endeavor to gather his playthings together, and put them by in the box, drawer, or cupboard, allotted to them ; and even in this he must be assisted, for when amusement is over, the interest in them is over also, and the child can not be expected to understand the utility of order, till he has had experience of its advantages.

We do not mean that children should be *taught* to play, or that their faculties should be systematically put to work ; the object is to furnish the means of employing the activity with which they are so largely gifted, so that it may not be used injuriously to themselves or others, but be turned to the development of many of the mental qualities. Neglected children exhibit melancholy examples of the misapplication of their early powers. The well-worn adage—“Idleness is the root of all evil”—applies to infants as well as to adults : with this difference, that their idleness is not a matter of choice, and that, intellectually as well as physically, they are dependent beings.

The playthings of children may be made serviceable in giving them notions of property. Furniture, utensils, books, and the ornaments of a house, offer constant temptations to the curiosity and activity of children, and are often materially injured by them ; they are continually infringing positive commands

when they meddle with them ; but if provided with proper objects of amusement and observation—if they be repeatedly shown that these objects are *their own*, but not the furniture—the temptation to err will be less. Besides which, there ought to be as scrupulous a regard to the property of a child, as is required from him with regard to the possessions of others, while the understanding may be strengthened by reserving some few articles, which can be lent when *asked for*. These should be kept apart, and over his own toys there should be perfect power, while they are not applied to injure other people. When there is a determination to destroy, no new toys should be bestowed, but it is scarcely fair to take away those already in possession : an article once given becomes property, which the owner can not be justly made to resign. No moral law should be infringed, because a child is in the power of its parents : if so, the rule is admitted that authority—superior strength—in short, whatever constitutes *power*, may do wrong at its pleasure. Children should feel that their parents are their protectors, who will not only rescue them from the danger of the moment, but also foresee and prevent evil. Having felt this in all that regards comfort, health, the allaying of hunger and thirst, alleviation of pain, &c., they will soon make an instinctive moral application of the protective power and inclination.

By endeavoring in this manner to amuse or delight the tender perceptions of infants, mothers will have performed an important part of their duty.

SECTION II.

GRADUAL DEVELOPMENT OF MIND.

UNDER two years of age—or even under three or four, according to circumstances—children should not be incited to acquire any species of knowledge which requires a considerable exertion of the intellect. Attempts to teach very young children to read, to repeat answers to catechisms, &c., are highly blamable. All that is brought under the notice of the infant should excite joyous conceptions in his tender mind, and gently encourage the growth of those habits which are an ornament in youth as well as later years. Children being the creatures of imitation, should, by all means, be reared only by female attendants who possess an equable temper, and will study to cultivate correct sentiments and habits in their young charge. For the same reason, children should not be allowed to associate with persons who talk coarsely or indelicately. Let mothers be assured that they can not commit a greater error in the rearing of their children, than assigning them to the charge of incompetent nurses and attendants ; for thus habits are ingrafted which no discipline or education in after years can altogether eradicate.

It may be asked, whether there should be any difference between the mode of rearing male and female infants. We answer, none at first. The mental faculties of both sexes are radically alike. It may, however, be useful to mention, that boys are usually more difficult to rear than girls. It is allowed, for instance, that they are more liable to convulsion-fits.

As infants approach two or three years of age, they will have a tendency to amuse themselves in a manner befitting their sex. A taste for nursing seems a strongly-implanted passion in females, and will readily demonstrate itself in the fondling and dressing of dolls. This is a sentiment which should be encouraged by the mother or nurse, not only because it is natural and innocent, but because it leads to careful and tasteful habits.

Many women will acknowledge that their taste for neatness in attire was first cultivated by the attentions which they lavished on their dolls. Boys will, in the same manner, exhibit peculiar tastes and tendencies, which will admit of similar regulation.

At two, or it may be three years of age, infants pass imperceptibly into a condition of mind and body which calls for a more enlarged course of treatment than that to which they have been previously subjected. Now should commence that species of training which is always best carried out *socially*, or with respect to a number of children together, either at home or in the infant-school, or both. — MRS. BARWELL.

The child should not only be taught the arbitrary names of objects, but a knowledge and use of them. The first rudiments of education can soon be taught, followed by natural history, botany, astronomy, physiology, &c. It requires but a short time for a very young child, by means of a wooden skeleton and models, to learn the names and uses of all parts of the human system. All education should be practical. As the child progresses, it should be taught only the more solid and useful branches, such as are required in the ordinary concerns of life.

There is no excuse in this day for permitting children to grow up in ignorance, and consequently in vice, when there is such provision for their learning. In general, where practicable, it is better to teach them at home than at a public school, where so many are collected and trained up in bad habits: for we read that "evil communications corrupt good manners." A very moral child will soon become contaminated by associating with children where correct training has been neglected.

The mind, then, of the infant and the child should be constantly trained and enlightened, as it is gradually prepared to receive instruction, in every branch of useful knowledge and education, as well as of good morals.

CHAPTER III.

MORAL TRAINING OF CHILDREN.

SECTION I.

IMPORTANCE OF EARLY IMPRESSIONS.

DURING the first few weeks of life, happiness is solely derived from the healthy operation of the bodily functions. Until the senses begin to act so as to convey impressions to the brain, there can be no pleasure drawn from external circumstances. The activity of the senses, and the enjoyment produced, will be in proportion to the state of the health.

An infant who is continually in pain, who is either crying, moaning, or in a state of repletion or of exhaustion from the consequences of suffering, will be but little attracted by the light, sound, or motion, which first engage the senses of infancy. In no other instance, perhaps, are the influences of the physical condition so immediate and so evident. An infant, even of three weeks old, will exhibit a haggard, grief-worn countenance, sunken eyes, and shrunken face, painful to those whose experience tells them what these signs indicate. But the fair, plump, contented look of the healthy babe, speaks a language of comfort, prophetic of the approaching dawn of intellect. How early does such an infant smile upon its nurse, fix its eyes upon her with a look of awakening intelligence when she speaks in accents never addressed but to infancy, and reply with the little dove-like sounds only uttered by the healthy babe! The happiness or misery of this period of life is wholly derived from the physical condition, and the dawns of the sentiments and the intelligence are in proportion to the health.

The general irritability caused by disordered functions, renders the impression upon the senses even more painful than pleasurable; the disposition for enjoyment bestowed by the feeling of health is denied; the mother's voice, her smile, are associated with pain as much as with pleasure, and the affections are imperfectly and tardily aroused. As weeks pass on, habits form, and instead of a habit of contentment, there is one of fretfulness. An infant so constituted is either reared with an indifference to its continual crying and fretfulness, or with the apprehension which causes its nurse to be continually seeking how she may quiet or prevent its cries. At the age when food alone appeases it, the babe is always eating or

sucking ; as it grows older, sugar, cake, &c., are superadded, with the addition of noises or rough exercise, and but too frequently some sedative or composing draught, which the mother believes herself obliged to adopt in order to procure the child needful repose, or the servant surreptitiously administers to relieve herself from incessant fatigue. When the time arrives that restraints and guidance should be adopted, the fear of further irritation by contradiction leads to a system of bribes, deceit, and coaxing ; all the lowest sentiments of human nature are appealed to ; and at two years old we have a selfish, wilful, ill-tempered child, with violence apportioned to its strength, and intelligence prompted by ill feelings. It is not to be supposed that these moral disorders belong exclusively to bad health. A healthy child may be selfish, wilful, and ill-tempered, at two years of age, if injudicious treatment have cultivated the lower sentiments ; but the healthy infant is predisposed to receive happy impressions, and enjoys the condition called good temper—a term which in infancy is synonymous with good health. The nurse has fewer temptations to mismanagement ; and, the affections and intelligence being more healthful and active, moral mismanagement actually produces less permanent injury.

There can not, then, be too much value attached to the physical condition of an infant, to the condition of the parent while pregnant and while nursing, and to the regulation of every particular connected with the health of her offspring. This being the first object, both in point of time and importance, the next consideration is, the means of developing the moral and intellectual faculties.

SECTION II.

NECESSITY OF CAREFUL TREATMENT.

THE brain, on which the mental functions depend, is in infancy the least perfect organ. Only a few of the simpler instincts, as the appetite for food, are at first in any degree active. After the child is a few weeks old, he begins to exercise his senses, and the first traces of intellect and feeling are exhibited. But still, and for long after, the brain is in a tender and delicate state, calling for the gentlest treatment. No loud or harsh sound should therefore ever reach the ears of young children ; no violent light should be allowed to come before their eyes ; they should always be addressed in the softest tones ; and nothing should ever be done in the least degree calculated to frighten them. These are the chief particulars of treatment which we are called upon to attend to, with regard to the mental system of children, during the first few months. Opposite conduct is apt to produce serious damage, and that of a very durable nature.

There are particular cases and circumstances, in which the value of kind and gentle treatment is greater than usual. Perhaps the infant may have derived from nature a constitutional irritability ; or he may be accidentally pained by some derangement of his system. In these cases, caresses, gentle changes of position, and lulling sounds and movements, are of great consequence ; while all loud singing, talking, rough and sudden jerks, and particularly scolding, should be avoided.

For further progress in the moral management of infants, it is in the first place necessary to bear in mind that the mental faculties, in their various degrees of natural strength, rest at first undeveloped, but ready to be brought into activity in accordance with the respective circumstances which are naturally calculated to stimulate them. All of these faculties are designed for useful purposes, under the guidance of reason and moral principle ; but it may so happen that some of them are naturally in very strong activity, or are called into great force by the circumstances with which the individual is surrounded, so that the character may ultimately be of a very irregular and uncontrollable kind. In moral education, it ought to be the first object of a mother to put the more lively faculties of her infant under proper regulation, or restraint if necessary, and so to evoke and train the rest, that, in the result, she may have the best character which nature admits of in that case.

Practically, the circumstances by which the infant is surrounded are sufficient to serve the whole end

in view, as far as very young infants are concerned ; for it is clear that if a child, for example, be brought up in a scene where angry words are never heard, and where nothing of an unduly irritating nature is allowed to visit him, his own angry feelings, though strong naturally, must be in a great measure kept out of exercise, and consequently weakened ; just as the same circumstances, by their soothing and pleasing nature, are likely to have an active and positive effect in bringing out his own kindest and softest feelings. In like manner, supposing that a child may have a strong natural tendency to secretiveness, and that he never witnesses or hears from those near him anything but the most perfect candor and directness, his tendency is just as liable to be kept below the point at which lying and deception take place, as his opposite feeling in behalf of truth is likely to be positively encouraged.

The first duty, then, is for the mother to be and to do on her own part as she would wish her child to be and to do ; and to accommodate all other circumstances, as far as possible, to the same end, particularly as regards the selection of attendants. She must be on her guard against the delusive notion that an infant of a few months old is not capable of being affected by the conduct of those in whose arms he lives. Though unacquainted with words, he is perfectly alive to what may be called the natural language of the feelings, as harsh looks, loud and sharp tones, or the reverse. At three months, the smile of his mother elicits from him an answering and sympathizing smile ; and at the same age an angry gesture will frighten him. And not only is he sensible of language of either kind addressed to himself, but also of what is addressed to others. An instance is on record of a child falling into fits in consequence of a violent altercation between his nurse and another person, which took place in his presence.

An infant may possess such gentle dispositions, that he will contract no disposition to quarrelling from seeing his elders always doing so ; but this is a mere chance. The dispositions may naturally have a strong bent that way, and he will then be, as it were, in the very school calculated to make him a thorough quarreller. The more perfectly that the home of infancy is a home of peace and love, the chances are unquestionably the greater that the children will grow up creatures of gentleness and affection.

SECTION III.

LANGUAGE OF INFANCY.

THE earliest intercourse between a mother and her child, is carried on by means of the expression of the countenance and the *tones* of the voice. The first language of an infant is the language of *signs* ; these are at first involuntary, and indicate his wants and sufferings. After some time he begins to be sensible of the existence of external objects, and to distinguish his mother's face from that of all others. In this face he reads his first lesson. The child ascertains that there is one who takes constant care of him, to whom he can make known his wants and wishes ; he looks, and she understands ; he cries, and she hastens to his relief ; he improves daily in the use of a language which he finds is intelligible to her, and becomes at length a little master of pantomime. He sees, too, that she looks differently at him at different times, and that the tones of her voice vary, indicating pleasure, pain, approbation, and reproof. Thus, long before oral language is used, the mother and child have established a symbolical language of the countenance and tones of the voice, to which, if the child is sprightly, and the mother has a tact for it, *gesticulation* is added. The mother has perhaps used this natural language unconsciously, but she may do much to improve and refine it, and to extend its use in the development of the moral and intellectual powers of her child. Expression of countenance adds greatly to the force of speech ; and as it is subject to the will, it can be cultivated and improved.

A mother should take care that every feature, look, and movement, corresponds with her feelings, and this without affectation. *Let her feel as she ought*, and then endeavor to *look as she feels*. Let her, when the occasion calls forth the corresponding feeling, cast upon her child a look of pity, of sympathy, of

consolation, of composure, of interest, or of playfulness, giving to each a distinct character, while her habitual expression should bear the stamp of gentleness, patience, cheerfulness, and hope. When government and discipline are necessary, let the countenance exhibit authority, decision, firmness, disapprobation, and a determination to be obeyed — mingled, however, with entire composure and self-possession.

In infancy and childhood, the muscles of the face which give it expression are exceedingly pliable, and yield an almost involuntary obedience to the emotions and operations of the mind. In addition to the care which mothers should take to preserve a command over their own features and tones of voice, it is important that the same care should be exercised over the children themselves. By these means much may be done to mould the features into forms indicative of virtuous emotions. Habits of expression have a powerful influence upon the internal feelings. A smile, even if produced with effort, will assist in calming angry emotions. There need be no hypocrisy in this. We adopt various methods of self-control, and effect that by *indirect* means, which we find by experience *direct* efforts of the will can not accomplish.

The effort to control our features aids us in subduing internal emotion. This principle may be perverted, and applied to the worst purposes, for all that is good is subject to abuse. The child who is early habituated to avoid disagreeable, sullen, fretful, and unkind looks, and whose affections are at the same time cultivated on sound principles, will have additional security given to the exercise of these affections, and a power of subduing contrary feelings, wanting to the child over whose features and modes of expression no such discipline has been exercised.

Great pains are often taken to cultivate the manners, and to give them an air of courtesy, respect, and kindness. The tones of the voice, articulation, pronunciation, and modes of speech, are made matter of early instruction. There is no doubt that all this has an influence in moulding the intellectual and moral character. The various expressions of countenance are as susceptible of control and discipline, and react on the mind with as great a force. They should therefore be formed into habits, as well as the manners, or the voice, for there can be no greater danger of offending against nature and simplicity in the one case than in the other.

The effect of these principles is fully seen in the change which takes place in the countenance of an uneducated deaf mute, after he has enjoyed a few weeks' intercourse with his companions in misfortune in an asylum. His features, expressions of countenance, and general deportment, undergo a wonderful transformation, and seem to acquire a new power. Catching by imitation the spirit of those around, they become instruments for the expanding mind to employ, and have no small degree of influence in forming habits of thinking and feeling.

It is neither necessary nor desirable to school children into studying the expression of their features. As their violent emotions should be repressed, so every expression of that violence, whether shown in voice, feature, or gesture, should be gradually checked : not thrown back to be indulged silently, and in concealment, but in infancy, by the mother's calm expression of pity, regret, or condemnation, and in childhood by the same means, strengthened by rational appeals to the good feelings. A glance of the mother's eye is often sufficient to deter a child from error, a gesture to recall former advice, a word to overcome resistance, or soften rebellion. This power must have been established from the first.

However much the gift of personal beauty may have been misused, and although it be confessedly secondary to moral and mental beauty, yet the charm of an agreeable and expressive face can neither be denied nor unfelt. Young children generally possess this charm ; and if it do not remain in after years, it may be because the indulgence of bad passions or bad habits have marred it. It is obviously the mother's duty to preserve the best gifts of nature, and to endeavor that the pure affections, lively intelligence, and gentle sympathies, they seek to cultivate in their children, should speak in their countenances as well as in their actions.

SECTION IV.

INFANT DESIRES AND INSTINCTS.

For some time a child is content to enjoy the sight of objects, but growth and increasing strength apparently inspire the desire to touch and to grasp. The efforts to do this are for months uncertain and imperfect; there is no knowledge of distance or size; the infant reaches too far, or not far enough; too much on side or the other; and when the hand accomplishes its intention, it has no power to hold or grasp the object of its desire. Next comes the wish for possession. All who have observed the early manifestations of infancy, know that a child is not satisfied to touch and take hold: it wants to *have*. No matter how unwieldy the object, possession alone will satisfy. The gestures accompanying these desires are animated in proportion to physical strength and energy; the infant leans forward, stretches out its arms, kicks its legs about, sometimes with a little straining scream, not, however, of anger, but of anxious expectation. The cry of anger comes when the object can not be obtained, or when it is suddenly removed.

Disappointment and vexation being expressed by the same means as bodily pain or hunger, it is not improbable that the attention which such manifestations have procured, leads the child to expect that crying will obtain all its desires. This impression should be removed, and a contrary lesson impressed. First, the infant should not be allowed to have what it cries for; and as the countenance and manner of the mother may have been the means of awakening happy emotion, so they should express concern at the evidences of impatience. If the child desires an object which it may touch, the wish should be granted before it grows into irritability, yet not in such haste as to preclude a small exercise of patience and forbearance.

Instant and constant attention to the wants and wishes of children, renders them exacting, violent, or fretful, and will even engender a love of command, and impatience of control, quite inimical to obedience. Playful notice, while the child waits, will at first serve to restrain irritable feelings. It is too much to expect an infant to await its gratification with no other occupation than expectation. This comes when time and habit have confirmed the certainty that the mother *will* attend to the wishes of the child; reliance upon her, and confidence in her love and truth, tending to confirm serenity of temper. The influence of love fosters our best feelings. Love is our moral sunshine. An infant who is always surrounded by kind looks and gentle voices, not only imitates what he sees and hears, but all his emotions are of that happy character which inspires kindness. As months and days increase, his sources of happiness increase; he is prepared by his own physical comfort, and the affection he experiences, to look upon every new object with confidence and cheerfulness; anticipating nothing but benevolence, he welcomes everybody and everything with gladness. Constitutional timidity is checked, and a habit of contentment formed.

An infant, when once excited, often continues to cry after the exciting scene has ceased. To change the nature of the emotion should be the object; and where everything is new and unknown, this is sufficiently easy. A pleasing sound, a bright object, will often suddenly put an end to a fit of anger. To prevent irritating circumstances is still more important. Uneasiness, however trifling the cause, disturbs peacefulness, and it is from peacefulness that cheerfulness and good temper spring. When the feelings are thus prepared, trifling annoyances are, after a while, more patiently endured; and as intelligence appears, there is a greater readiness to observe and to derive happiness from external objects. Differences of temperament are early manifested; excitable natures must be moderated by calmness and gentleness; sluggish natures excited, yet never with violence. A fat, quiet, white-looking child, may give little trouble, and this condition is therefore called sweet temper; but it is quite as nearly allied to insensibility, which must be shaken off by the activity of the parent; otherwise, selfishness, and a love of whatever contributes to selfish pleasures, may spring up.

A young infant requires constant attention; but as time goes on, enough of this may be given, although

the child be left (or apparently left) to itself. Thus, at a tender age, he acquires a species of independence, namely, that of finding happiness in himself and for himself. A babe of six weeks old, awake in his bed, is preparing for this independence; at ten weeks, he will have fixed his eyes upon some attractive object, perhaps upon his own moving fingers, and he is happily occupied. At a later period, when he can sit in a chair, or on the floor amid his playthings, he will require the watchful glance of the mother, and occasionally a word, or a little help, to assure him of her presence and sympathy. If the child be inactive and dull, then he will need to have his powers of observation frequently addressed and kept alive; but an excitable child is best left to wear out the liveliness of his impressions upon a few objects, without interruption, or any other stimulus than that which is innate, or aroused by the objects themselves. An infant with lively feelings and quick perceptions is more likely to be impatient and violent than one of slow perceptions and deficient sensibility, and will need a counteracting rather than an exciting power; he should not be hurried from feeling to feeling, and from object to object, but encouraged to dwell upon one.

Every office performed for a child should be done with gentleness and care. When carelessness pervades the general management, the child must be continually uneasy; he consequently gets the reputation of bad temper, and is deprived of those kind influences which can alone foster goodness. The close connexion between physical comfort and moral development ought never to be overlooked. Perhaps the most difficult period of infancy is that in which the want of speech is felt, but without the power of utterance. The intelligence is often great; the sentiments active; wishes and wants are intensely felt: but the means of expression are imperfect, and often unintelligible. The more intelligent the child, the greater is the probability of violent emotion following the unsuccessful attempt to understand and be understood. This is the time when the mother's influence, and the experience she has gained of her child's character, will come into use. A child who can not make himself understood usually screams; it is in vain to attempt to silence him by giving him something that he does not cry for; neither will any good purpose be served by talking to him while crying: while violence is at its height, calmness and silence are the best reproofs.

Besides, when a child is screaming, the voice of the mother must be elevated to loud or shrill tones in order to be heard; such sounds can only be associated with scolding, or with a noisy mirth, ill befitting the feeling with which she should witness violence. The object is to show that screaming is of no avail, and that some better means must be adopted to express and obtain its wishes; there will be many bursts of anger before this is effected, but no evil need be apprehended. While the mother is firm and calm, the child will not cease to love her, but, on the contrary, her aid will be felt upon this point quite as much as in matters of bodily suffering.

It is not unusual for a child so treated to soften into tears of real grief, on finding that his mother's countenance looks sorrowful, and so to forget the cause of his excitement. It is always better for the parent and child to be alone together during such scenes. A child of a year old, when crying with anger, will often look round on his observers with an air of defiance or determined resistance, or, conscious that they have no sympathy, relapse into stubbornness. However erring, he should at no age feel that he has lost his mother's sympathy; and on the slightest evidence that grief has succeeded to anger, she must be ready to encourage and to aid. A shake of the head, a firm but gentle *no*, silence, or placing the child in solitude, will sometimes calm the passions; but this must be cautiously tried, lest it cause terror or greater violence.

It is an error to induce children to cease crying by promising them what they want as soon as they leave off; for if they can understand the words, "*When you have ceased crying, I will give it to you,*" they can quite as well comprehend, "*You can not have it, because you have cried;*" but when anger has subsided, amusement must be provided, so that the child shall not relapse into fretfulness; the object being, not punishment, but to show the child that violence will not obtain its wishes. It is difficult to discover how children acquire the power of interpreting language, but they do so long before they can use it: tone of voice, and expression of face, assist considerably; strangers, particularly when not accustomed to children, being rarely understood by them.

SECTION V.

MORAL GOVERNMENT, MANNERS, ETC.

It seems desirable to accustom a child to listen to a few words from the mother relating to familiar objects or persons, or to some of his own actions, that he may be habituated to comprehend, or at least to endeavor to do so ; and he might be questioned by words and signs, so that he shall reply by gestures, and by such sounds as he is able to utter. As the violence of this period of childhood arises so much from want of language, pains should be taken by the mother to establish between herself and her child some means of communication that will smooth the difficulty.

Constant warnings, threats, or entreaties, have a most pernicious effect, when the obedience they would obtain is not insisted upon : the child, becoming accustomed to them, ceases to regard them, and imperceptibly discovers that words do not really mean what they pretend to convey, and thus a disregard for truth is first taught. When a prohibition is given, it should be adhered to ; it will be necessary to repeat it many times, because the tender mind can not be expected to retain ideas which may immediately influence conduct ; but the repetition must be made seriously and patiently, not by an angry ejaculation or reproof, uttered in haste and irritation. The oft-repeated — “ *Let that alone* ” — “ *Be quiet* ” — “ *Don't do so* ” — “ *How naughty you are !* ” — only conveys that something is wrong : no impression is made, except one, characterized by some annoyance felt equally by both parties ; and no fixed and definite experience is obtained.

A mother should always endeavor to ascertain what qualities or tendencies are most injuriously active, and, as far as possible, suppress them by a gentle course of treatment ; at the same time, she should observe what are the weakest points of character, and if these belong to the good qualities of the mind, let them be cultivated and exercised with all the diligence which she can command.

For example, if the child incline to be destructive, by breaking toys, killing flies or other small animals, abusing his companions, &c., it is of importance to check and suppress this dangerous propensity, and to rouse into activity benevolence and gentleness of manner in its stead. If the child show a deficiency in any useful quality, as memory, language, power of observation, and so on, these should be frequently exercised, because exercise strengthens ; and the longer that the exercise is continued, the power of performance becomes the more easy and agreeable. In a word, *check bad propensities, encourage good ones*, and in either case with gentleness and moderation, according to circumstances.

It is important to recollect that the vicious or disagreeable tendencies of children are at first weak, and in most instances may with little trouble be remedied. But as the disease is superficial, the corrective should be light. It should be the object of the mother to prevent rather than to cure. If she keep her child from evil communications—that is, associating with persons, old or young, who are likely to sully the infant mind, and nothing is more easily done—she will be spared days, weeks, perhaps years, of toil, in eradicating the mischievous tendency which has been excited. But in the worst circumstances that may arise, do not on all occasions oppose and correct. The child should not be aware of your intentions to correct it systematically, for he soon discovers that he is to be thwarted, and is as ready for combat as his opponent. In this manner, injudicious correction has spoiled many children, who might otherwise have been the pride and solace of their parents in after-years.

Cleanliness, order, and general propriety of demeanor, are to be ranked among moral virtues, and their foundation is to be laid in childhood. Parental example will do much, whether manifested in the observance of regular hours, of neatness, delicacy, genuine courtesy, and the ease which always accompanies true refinement. Children can not be taught what is termed manners without rendering them affected and insincere, for these are usually artificial and conventional ; but they may be practised in the true elements of politeness, namely, self-respect and a delicate regard to the rights and feelings of others, in contradistinction to the mere desire of admiration, or the selfishness which has no regard for opinion, and which only prompts to individual gratification.

It is desirable that children should observe a cleanly and delicate method of eating and drinking : while they are too young to feed themselves, their food should be given to them with attention to neatness and comfort ; as soon as they can assist themselves, continued care will be necessary to accustom them to the spoon, fork, and knife, and also to arrange the food on the plate, so that it may be eaten with attention to the method usually observed. Drinking or speaking with the mouth full, putting the fingers into the plate and mingling the food, should be checked at first. Picking the teeth, spitting, or blowing the nose at the table or before others, should also be discountenanced.

Conduct at table is worthy of attention. Children are often inclined to play with the different utensils, and so to break or overturn them : this habit, with that of reaching for what they require, putting their elbows on the table, sitting awkwardly, and other uncouth demeanor, often interrupt the comfort of the family meal. A love of order is so natural to some children, that any change from their customary routine, or in the usual place of the different objects around them, has been known to excite them to anger or tears. There are other minds, however, in which a love of order must be created.

Mutual confidence should be a governing principle in the communion between parent and child. This can not exist where the former acts only as a judge and lawgiver, who acknowledges no compassion, no sorrow, who can not weep and hope with the offender. The few words, "*I am sorry that you are angry*"—" *Try to be good, and I will help you*"—" *Wipe away your tears, and let me hear what vexes you*"—are more likely to overcome error, or turn away wrath, than stern commands or cold disapprobation : for this treatment does not conceal that there is error, or disguise its evils, while it differs totally from the compassion which fondles or coaxes, and bribes a child to soften its violence or withdraw its opposition. Are there not moments in the lives of all, when a confession of error to a friend whose sympathy, consolation, and encouragement, are certain, lessens the bitterness of self-accusation and confirms good resolutions ? Are there not also moments, when the want of such a friend, or the reproaches and cold contempt of those who possess a right to condemn, hardens the heart, and converts a wavering repentance into dogged perversity ? If, then, at an age when experience and self-dependence are so influenced by the denial of sympathy and the administering of stern reproach, how much more must the tender buds of infantine feelings be nipped and withered by the chilling frosts of severity ! Nothing can be more beautiful than the conduct of a child reared under the influence of love. It enters among strangers unabashed and undismayed, ready to welcome, to be welcomed, seeking happiness, and prepared to find it in everything, and with everybody ; so willing to be pleased, that every gratification, however trifling, is prized and enjoyed ; habituated to cheerfulness, yet so full of the sympathy it has so largely enjoyed, that, however gay, it does not lose sight of the comfort or sorrows of others ; however amused, there is no selfishness in its enjoyments ; the mind is active and energetic, and the whole character beaming with intelligence and happiness.

Reverse this picture, and see the child who has been governed by fear : a suspicious timid glance, an endeavor to escape observation, no spontaneous prattle, no words or actions pouring out the unrestrained thoughts and feelings ; nothing truly enjoyed, because there is an undefined fear of doing or saying something which may provoke rebuke ; or if there be enjoyments, they are received in silence, and in that solitude of heart which leads to selfishness. Candor is a quality to be encouraged in children ; indeed, it is natural to them : their helpless dependent nature leads them to seek and bestow confidence ; they have no reason for concealment, but such as fear induces. If it be needful, as assuredly it is, to learn the character of a child's disposition and feelings, to trace out the beginnings of error, to observe how impressions are made, and what are their effects, how can this be done when fear influences the child to conceal, to misrepresent, to affect, and to deceive ?

To a young mother whose career of maternal duties has but just commenced, it may seem unnecessary to dwell upon the importance of an affection which she believes is already too full for increase ; but she must look forward to the time when she will be surrounded with little ones, of different dispositions, the novelty of her situation worn off, and youthful spirits less joyous and elastic. When pecuniary means are not so equal to the support and comfort of many as of one, when cares and anxieties of all kinds

increase, then comes the time for the exercise of perfect love, when it is most powerfully taxed, and when it is most likely to give way. The active mind is more liable to irritability than the indolent; therefore the best informed, the most ardent, anxious, and well-meaning parents, are the most likely to forget their previous convictions, and in a moment of impatience to inspire their children with fear, and thus to shake the confidence which the child ought to repose in its parent. So true is it, that before we can govern children, we must be able to govern ourselves.

Obedience from child to parent is justly insisted upon; but it is not sufficiently considered that the means of establishing it depends more upon the conduct of the parent than upon that of the child. Obedience, to be of any use in forming goodness, must be based upon love, respect, and confidence.

It is by no means unusual for children to be told that whatever their parents do or say is right, that they must be loved and looked up to as patterns, and obeyed without hesitation. Now, instead of *telling* them this, it would be wiser to make them *feel* it; and by the exercise of kindness and gentleness to all, industrious attention to duties, strict and universal observance of truth, to earn the love and respect we would command, and, by example and practice, accustom the young to witness and experience the effects of the virtues we recommend. The feelings of children may be subjected to habit as readily as their appetites, and they can only be habituated to goodness by continually feeling its effects. The serenity and happiness produced by kind treatment nourishes love to others; example shows how that love may be made active. The child who sees that its mother's occupations have a reference to the advantage or welfare of others, that they contribute to the comfort of all, and that she finds pleasure in these occupations, has learned a practical lesson in benevolence; and if it seek to act upon what it has learned, its effort should be gratefully received: no matter whether they are serviceable or not, the *intention* is the thing to be valued. It exercises the benevolence to employ a child in little services, such as fetching an article that is wanted, putting things in their places, picking up litter, &c.; when cheerfully executed, they should be acknowledged, and if unwillingly performed, thanks are still due; but the child might be made to perceive that a willing service is most prized.

A mother gains nothing, and loses everything, by making a child *fear* her. Fear may compel obedience, but it will establish no real goodness, no spontaneous wish to do right; on the contrary, commands will be evaded, whenever it may be done with impunity. There will be concealment of thoughts, feelings, and actions; and cunning and deceit will take the place of truth and honesty, and the mother will never have any influence, nothing but temporary power. The only fear a child should feel, is the fear to do wrong; not, however, because it dreads punishment, for this is a low debasing motive, but because it would not pain those it loves. The fear of a mother's sorrowful countenance will be a more efficient check, a more healthful influence to a *young* child, than the fear of her angry looks or her angry voice. Confidence in a mother is very necessary to obedience, and can only be obtained by such a practice of truth and steadfastness on her part, that there is a perfect reliance upon her. A child has little or no experience of the consequences of his actions, nor will he with the best guidance always consent to take warnings and prohibitions upon trust; but when he is never deceived, when promises are never broken, threats never made in vain, there grows up a faith in the mother that leads a child to respect and to obey. To gain this faith, this perfect reliance, the mother must be consistent, equal in temper, the same to-day as yesterday—otherwise the child becomes confused, does not understand why the permission of yesterday is changed into a denial to-day, or why the smile of affection is now altered to the tone of irritable complaint.

Falsehoods of a very fearful kind are sometimes uttered to deter children from errors. Threats of old men and black men, and other like terrors, false and true, are resorted to, to frighten them into obedience. It is ascertained that deaths, fits, idiocy, or insanity, have been the consequences of such inhumanity. But setting aside the probable chance of such calamities, there are other *certain* results: if the child discovers the falsehoods practised upon him, he becomes boldly indifferent to the threats, is more disobedient and wilful than ever; disbelieves all that is said to him, and, finding no respect for truth in others, has no regard for it himself. What becomes of the timid child? He lives in a state of fear of he knows

not what ; the sight of a strange face or a new object fills him with terror, for it may be one of the horrors with which he has been threatened ; his faculties are all deceived, and diverted from their proper objects ; he lives a life of fear and doubt, unable to distinguish between what is true or false, real or unreal, good or bad. He loves nothing : it is well if he does not hate. But he is not the more obedient.

The exercise of any sort of cruelty toward children renders them insensible to the sufferings of others. And this is the reason why they should not be subjected to personal chastisement. Imitation being one of the strongest faculties, the child who is beaten also uses blows to effect his purpose. There are many parents who, upon calm reflection, would shrink from inflicting a personal correction, or encouraging violence, yet are continually fostering a passion for fighting. For instance, a child falls down and hurts itself against the floor or the furniture, and is immediately urged to beat them. This is the first lesson, practically showing that revenge is to be indulged. Above all things, let the mother beware how irritability betray her into a slight pat, a twitch, or a gentle shake : if indulged, they inevitably lead to something more, and personal correction becomes a regular habit. When once recourse is had to blows, nothing else is left ; the child is hardened to the sense of pain, indifferent to disgrace, and, before committing a fault, does not consider whether he is about to do right or wrong, but weighs the chance of escape, and the proposed gratification against the pain of a beating. There is a quality in most minds which resents injustice and feels disgrace. It is a valuable sentiment, and gives that self-respect which assists in elevating the character, and preserving the individual from everything base and degrading. When this sentiment is powerful, a resentful feeling is aroused by violent correction—not the humility which is necessary to a sense of error and consequent amendment. Where it is not active, chastisement extinguishes all feeling of self-respect, of honest and worthy ambition, of generous desire, and establishes in their stead a taste for all that is base, low, and sensual.

Every correction that is inflicted in anger bears the appearance of revenge, and seems intended to gratify the offended feelings of the parent, not to amend the child. If a parent is angry, she must wait before she speaks ; this will give her time for reflection, and then she will seldom err. It is a habit that should be perseveringly practised by every irritable nature ; many persons act wrong upon impulse, who are right upon reflection ; with such, reflection should always precede action.

No man submits to a blow ; he considers it the heaviest indignity he can receive ; while to strike a woman is deemed so great an act of cowardice, that few persons, however debased, are found guilty of the practice. Her weakness is her protection. How comes it, then, that children are subjected to a degradation which a man revolts from enduring or inflicting ? The nature of a blow is not altered by the person on whom it is inflicted, except that the physical weakness of the one party reflects upon the individual who deals the blow : the influence is, that the *parent* who inflicts personal chastisement is more degraded than the child who receives it ; and though the child can not *reason thus*, he *feels thus*, together with a sense of injury that must break up all filial respect and confidence. These remarks apply to a later period than childhood ; but the beginning is then, and the parent must beware of first steps. She must guard her own habits as well as those of her children.*

Some children early evince a love of cruelty : they torture insects ; they destroy wantonly, and pull in pieces, break, crush, and tear, everything that comes in their way. To cultivate the opposite feeling, as has been already mentioned, is the mother's part ; she must prevent every circumstance that can encourage the propensity, manifesting dislike at its exhibition. No better check can be found than occupation, giving a child something to do that will employ its energies harmlessly. She ought to show it how animals should be treated, first making use of a toy, teaching the child to feed, and caress, and protect, the representation of the dog or horse, and taking it away on the first exhibition of unkindness. When the child can comprehend her, she should relate tales of mercy, never of *cruelty*, even when the imaginary delinquent is punished ; for where there is a propensity to cruelty, the mind receives pleasure in listening to its details ; indeed, it is seldom prudent to tell children any stories which illustrate misconduct ; all their

* What monsters those parents and school teachers are who always, under excitement, repeatedly scold, strike, box, ferule, bruise, and whip children ! They are ignorant, base, and inhuman, and instil the same spirit into those under their charge.

early ideas should be of goodness ; their curiosity is often so much excited, that they are frequently impelled to do the things they hear of, in order to ascertain the facts.

Neither is it wise to excite the feelings by tales of deep sorrow or suffering : indifference or unhealthy sensibility too often succeeds such excitements, and compassion and tenderness are exhausted upon fiction, instead of being exercised upon realities. No child should be allowed to witness the death of trapped mice, rats, and drowning of puppies and kittens, &c. ; they can not be made sensible of the reasons for their destruction ; they do not know the nature of suffering and death, but only derive amusement from the spectacle, and learn to look upon pain as matter for sport and pastime.

Love, then, should be the impelling reason, the directing power of education. Where love influences the parent, the children of a family will be actuated by the same spirit—a spirit subversive of selfishness. Dissimilar as all characters are, different as all intellects are, and different as all situations are, the great duty of life is the same—the promotion of the welfare and happiness of our fellow-men. There are few errors, perhaps none, which do not affect the happiness of others as well as of ourselves : each individual who improves himself, improves society ; and every mother who rears her child aright, aids the universal progress toward excellence. — MRS. BARWELL.

As soon, therefore, as the understanding begins to dawn, every pains should be taken to cultivate the principles of virtue, and this will be perhaps most effectually done by holding up to the child the odious nature of vice. The principles of justice, kindness, mercy, and benevolence, should all be taught and illustrated in the conduct and character of the parents.

All harshness and cruelty, both to men and animals, should be avoided in the presence of a child. He should never be suffered to deride any deformity in a fellow-being. He should be taught to despise every species of vice—as dishonesty, intemperance, cheating, lying, swearing, and licentiousness of every kind.

Never let a child learn the trade of a butcher, a soldier (or the infernal profession of killing our neighbors, instead of loving them as ourselves, as the Savior commanded). Nor should he learn any business which is not lawful or useful to society, or which has a tendency to render the heart callous, or to injure the constitution.

CHAPTER IV.

RELIGIOUS EDUCATION OF CHILDREN.

ALL the preceding rules have a tendency to lay the foundation and prepare the way for a sound religious education. But no rules, relating either to the intellectual or moral culture, can ever become a substitute for true religion. Genuine religion is spiritual in its nature, and all its requirements are only known by the Book of Divine revelation.

The few remarks which I shall make on this subject will be, first, negatively, or that which the child should not be taught :—

1. The mind should not be influenced by sectarianism or prejudice. Almost any form of religion may be impressed on the young and tender mind of a child who has been subject to correct intellectual and moral training, if great pains be taken at an early age. Hence we see most children adopt the religious faith of their parents ; a striking example of which is seen in the perpetuation of the religion of the Hindoos, Chinese, and Mohammedans, as well as the numerous sects into which the Christian world is divided, to the disgrace of the professors of Christianity.

2. Children should not be taught to lay undue stress on any outward observances or ceremonies, nor to attach too much importance to creeds, liturgies, or formulas of religion of any kind.

Having thus very briefly hinted at the kind of religious instruction which should be avoided, I shall proceed to give that which I consider proper to form an intelligent and sound religious character :—

1. The mind of the child, as soon as intelligence begins to manifest itself, should be taught what is termed *natural religion*. The numerous subjects which natural history furnishes, and which abound on the earth, in the air, and in the sea, should be laid before it; their structure, beauty, and harmonious organization, should be illustrated and presented to it in a manner adapted to its capacities, and thus lead it “from Nature up to Nature’s God,” the Almighty Maker of all.

2. The child should be instructed in the law of God as contained in the Scriptures, and on all occasions to yield implicit obedience to the voice of conscience (God’s vicegerent in the human breast); he should be taught that this is a monitor placed within us, continually to direct us in the path of rectitude, and that our greatest safety is in all respects to follow its light and dictates under the guidance of that universal principle, the climax of all morality, taught by the Savior: “*Whatsoever ye would that men should do to you, do ye even so to them, for this is the law and the prophets.*”

Lastly, as the child advances in years, it should be directed to the Scriptures, without note or comment, especially to all its plain and practical duties—to the provision which is therein made for the salvation of man as a transgressor of the Divine law by repentance, faith, and obedience. In a word, the rising generation should be taught that “to fear God and to keep his commandments is the whole duty of man.”

The following excellent plan of religious education, adopted by the exemplary parents of the WESLEY family, is worthy of all imitation :—

“As self-will is the root of all sin and misery, so whatever cherishes this in children insures their after-wretchedness and irreligion: whatever checks and mortifies it, promotes their future happiness and piety. This is still more evident if we further consider that religion is nothing else than the doing the *will of God*, and not our own; that the one grand impediment to our temporal and eternal happiness being this self-will, no indulgences of it can be trivial, no denial unprofitable. . . . So that the parent who studies to subdue it in his child, works together with God in the renewing and saving a soul; the parent who indulges it does the devil’s work. . . .

“Our children were taught, as soon as they could speak, the Lord’s prayer, which they were made to say at rising and bedtime constantly; to which, as they grew bigger, were added a short prayer for their parents, and some collects, a short catechism, and some portion of scripture, as their memories could bear.”

(It is an excellent custom to collect the family together daily, not only to read the Bible and other useful books, but also for meditation or conversation on religious subjects, prayer, &c.)

“There were several by-laws observed among us. I mention them here, because I think them useful :—

“1. It had been observed that cowardice and fear of punishment often lead children into lying, till they get a custom of it which they can not leave. To prevent this, a law was made that whoever was charged with a fault, of which they were guilty, if they would ingenuously confess it, and promise to amend, should not be beaten. This rule prevented a great deal of lying; and would have done more, if one in the family would have observed it. But he could not be prevailed on, and therefore was often imposed upon by false colors and equivocations, which none would have used but one had they been kindly dealt with; and some, in spite of all, would always speak truth plainly.

“2. That no sinful action, as lying, pilfering, disobedience, quarrelling, &c., should ever pass unpunished.

“3. That no child should be chid, or punished twice for the same fault; and that if they amended, they should never be again upbraided with it afterward.

“4. That every signal act of obedience, especially when it crossed upon their own inclinations, should be always commended, and frequently rewarded, according to the merits of the case.

“5. That if ever any child performed an act of obedience, or did anything with an intention to please,

though the performance was not well, yet the obedience and intention should be kindly accepted, and the child with sweetness directed how to do better for the future.

“6. That *propriety* be inviolably preserved ; and none suffered to invade the property of another in the smallest matter, though it were but of the value of a farthing or a pin ; which they might not take from the owner without (much less against) his consent. This rule can never be too much inculcated on the minds of children ; and from the want of parents or governors doing it as they ought, proceeds that shameful neglect of justice which we may observe in the world.

“7. That promises be strictly observed ; and a gift once bestowed, and so the right passed away from the donor, be not resumed, but left to the disposal of him to whom it was given ; unless it were conditional, and the condition of the obligation not performed.” — ADAM CLARKE'S LIVES OF THE WESLEY FAMILY.

CHAPTER V.

SUMMARY OF RULES FOR MOTHERS.

RULES FOR SELF-GUIDANCE DURING PREGNANCY.

LET the future mother remember that the constitution of her child depends on natural circumstances, many of which are under her own control.

Study and obey the laws which regulate health.

Maintain a serene mind and an even unruffled temper.

Regard child-bearing as a natural and not a diseased condition, and dismiss an unnecessary and hurtful dread of it.

Suspend all the severer cares of life, and avoid the causes of extraordinary excitement, danger, and alarm.

Live on nourishing, but simple and moderate diet, with few or no stimulants.

Take regular and gentle exercise every day in the open air.

Continue, as far as possible, the ordinary occupations of life.

Endeavor to repress any tendency to nervous excitement.

RULES FOR TREATMENT OF THE CHILD AFTER BIRTH AND BEFORE WEANING.

Give the breast within twelve hours after birth, at latest.

Foment the breasts with warm water if the milk does not flow ; avoid rubbing the breasts with spirits.

If there be much milk, drink little, and take opening medicine.

As a nurse, wear easy dresses about the bosom and chest.

Keep down the tendency of the abdomen to enlarge, by exercise.

If the nipple is small or turned in, have it drawn by an older or stronger infant, not by artificial means ; but let the newborn child have the first milk.

Choose a hired wet-nurse (when required) nearly of the same age with the mother, like her in constitutional peculiarities, and who has been confined about the same time.

When nursing, live on nutritious, but not heavy diet. A full habit requires less nutriment than a delicate constitution. Stimulating liquors are to be avoided. Simple diluents, such as water, cocoa, or chocolate, are quite enough as drinks for many mothers.

The mother's milk is the best food for the newborn child for three months.

An infant from two to four months old, requires to be suckled once about every three hours.

The best substitute for the breast, but as temporary as possible, is ass's or diluted cow's milk; but on no account should farinaceous food be given at this early period.

Apply a flannel bandage to the lower part of the body in bowel-complaints. A warm bath soothes irritation.

After six months, an approach may be made to a more solid diet.

In general, give no stimulants, caraway-seeds, carminatives, &c. ; they are most pernicious.

Give as little medicine to a child as possible.

Never overfeed; and never stop crying by feeding.

Avoid rough jolting and patting on the back.

Train an infant to regularity in all its wants.

RULES FOR WEANING.

Wean gradually, discontinuing suckling in the night: the gradual change is beneficial to both mother and child. Avoid weaning in severe weather. Take for yourself a cooling purgative, and refrain from fluids and stimulating diet.

In weaning, apply to the breasts three ounces compound soap-liniment, three drachms laudanum, one drachm camphor-liniment. If this is too irritating, foment with warm water, or poppy-heads and camomile-flowers boiled in water. Avoid tightness or pressure from the dress, and all roughness, for fear of abscess. Avoid drawing the breasts: avoid exposure to cold.

RULES FOR TREATMENT AFTER WEANING—FOOD.

Study the child's constitution, digestive powers, teeth, strength, and proportion the kind and quantity of food. Bread and milk is the best diet for the child.

Avoid too nourishing a diet with a violent-tempered child.

Give a nourishing diet to a white-looking lymphatic child.

Both overfeeding and underfeeding produce scrofula and consumption.

The spoiled and petted child is injured both in health and temper.

Avoid seasoned dishes, fried and salted meats, pastry, uncooked vegetables, unripe fruits, wine, and cake.

Insist on thorough chewing or mastication.

Never tempt the appetite when disinclined.

Vary the food from day to day, but avoid variety at one meal.

Take care that the child's food is well cooked. Give no new bread.

Sweetmeats and confections are only to be given to children in a very sparing manner, if given at all. Never pamper or reward with eatables.

RULES FOR SLEEP.

Allow the child plenty of sleep without disturbance.

Avoid accustoming the child to sleep on the lap; it will not sleep in bed if so accustomed.

Establish times for regular sleeping.

Keep the hands, feet, and face, comfortably warm—blankets are better than sheets.

Support every part of the body, raising by a slope the head and shoulders.

Avoid laying the child in the same bed with an adult, unless for a short time to restore warmth if it fail.

Never rouse the child by play when taken up during the night.

RULES FOR CLOTHING.

In the first stage of infancy, warmth depends on clothing alone, for there is no muscular movement.

Avoid a degree of warmth which produces *sensible* perspiration.

Flannel and calico are the best materials in all seasons.

Dress the child loosely, and fasten with strings and not pins.

The umbilical cord, navel, and belly-band, require much attention.
 Avoid keeping the child's head too warm or its feet cold.
 Avoid chilling the child, or taking it abroad in cold weather.
 Attend to the form and size of the child's shoes, so that the feet shall not be cramped.
 The practice of plunging infants in cold water, to render them hardy, is exceedingly dangerous.
 Let a child's washing be very completely and carefully performed. Keep the child always perfectly clean and neat.
 Be very attentive to ventilate the apartment where a child lives, but never expose it to draughts of air.
 Begin early to form habits of personal cleanliness and delicacy.
 Regard should be had to the effect of light upon the infant.

MEDICINE.

It is improper to administer purgative medicines to the newborn infant.
 If the child is well managed, medicine will rarely be required.
 Physiological knowledge is very important to mothers.

VACCINATION.

Let the child be vaccinated from six weeks to two months after birth, and that by a proper medical attendant. Vaccination should take place before teething.

DEFORMITIES AND DISTORTIONS.

Be very vigilant with rickets or soft bones. Never allow the rickety child to support its own weight. It ought to be kept on its back for many months, and carried about on a little mattress on a board or tray, and have nourishing diet, and the proper medicine to give solidity to the bones.

Never jerk or swing children by the arms; much mischief has been done by this practice.

When a child falls or meets with any accident, it is highly culpable in a nurse to conceal it. If she do not immediately mention it, she may be the cause of the child's deformity and lameness for life.

With proper attention, a tendency to be *left-handed* may be easily cured in a child.

Prevent all tricks and ill habits which injure the features and organs, such as stuffing the nostrils, ears, &c., or distending the mouth with too large a spoon.

Curvature of the spine is of very frequent occurrence from mismanaging children, by tight-lacing, long sitting without support to the back — (all school seats and forms should have backs). Take all deformities of the spine in time, before they get fixed.

PRECOCITY.

When a child appears to be over-intelligent, or too *clever*, or *wise*, for its age, this is a symptom of an unnatural development of the brain: it is a kind of disease. Avoid, therefore, exercising the child's ability; treat it, as an animal, with nutritious food, muscular outdoor exercise, and plenty of sleep; and do this, and *this only*, for some years.

No child should be kept engaged for more than a few minutes at a time in mental study.

STAMMERING AND DEFECTIVE ARTICULATION.

This defect, with care, may be cured; or rather, when it is first threatened, it may be prevented. Practise the child in letters or articulations where a peculiar defect appears.

SQUINTING.

Watch this very common weakness, check it in the infant by holding the hand over the eyes till they are shut; and when opened again, if they have not assumed a proper position, repeat the operation. It may have often to be repeated. Careless nurses are very apt to *produce* squinting in children. The habit of looking obliquely, either with one eye or both, is that which has to be chiefly guarded against.

TEETHING.

The first sign of teething is heat in the mouth of the child—felt by the mother during sucking—flow of saliva—biting and grinding the gums. A piece of India-rubber is better than coral, ivory, or any hard substance, for rubbing the gums.

When the bowels are confined, give without delay a gentle purgative, such as castor-oil, manna, magnesia, or senna. The warm bath at ninety-six degrees soothes the child.

A child's mouth should be often examined, even after three years of age.

Wayward temper, cough, and even croup, have been traced to cutting a double tooth.

EXERCISE—WALKING ALONE.

Very little motion, and that of the gentlest and most careful kind, is all the infant should have for a considerable time after birth.

Avoid the upright posture as much as possible.

Avoid all sudden and violent jerking, and long-continued positions.

Allow the child to move its limbs freely on the floor or in bed.

Watch the first efforts of the child to walk alone, and interfere rather with eye and hand than by exclamations of caution and alarm: these last do much harm.

Avoid sympathizing too strongly with the child when hurt: assist quietly, and show how the accident happened. Children who are angry when hurt, should see that you do not sympathize with their rage, although you do with their sufferings.

Abjure all leading-strings and go-carts, or other artificial means of teaching the child to walk. Never drag the child by one hand, or lift it by either one or both arms.

When the child walks alone, it should not be permitted to over-fatigue itself.

The mother should have her eye both on her child and its attendant out-of-doors, and be as much as she can in her child's company.

MORAL GOVERNMENT.

Anticipate and prevent fretfulness and ill-temper by keeping the child in good health, ease, and comfort. Never quiet with giving to eat, or by bribing in any way, still less by opiates.

For the first few months, avoid loud and harsh sounds in the hearing of children, or violent lights in their sight: address them in soft tones; do nothing to frighten them; and never jerk or roughly handle them.

Avoid angry words, violence, striking, pushing, or whipping a child (if at all whip, never do it in a rage); by which means a naturally violent child will be trained to gentleness.

Moderate any propensity of a child, such as anger, violence, greediness for food, cunning, &c., which appears too active. Show him no example of these.

Let the mother be, and let her select servants such as she wishes the child to be. The youngest child is affected by the conduct of those in whose arms he lives.

Cultivate and express benevolence and cheerfulness: in such an atmosphere, a child must become benevolent and cheerful.

Let the mother *feel as she ought*, and she will *look as she feels*. Much of a child's earliest moral training is by looks and gestures. (Like begets like: love or hatred is infused by the mother or nurse into children.)

When necessary, exhibit firmness and authority, always with perfect temper, composure, and self-possession.

Never give the child that which it cries for; and avoid being too ready in answering children's demands, else they become impatient of refusal, and selfish.

When the child is most violent, the mother should be most calm and silent. Out-screaming a screaming child is as useless as it is mischievous. Steady denial of the object screamed for, is the best cure for screaming.

In such contests, witnesses should withdraw, and leave mother and child alone. A child is very ready to look round and attract the aid of *foreign* sympathy in its little rebellions.

Never promise to give when the child leaves off crying. Let the crying be the reason for *not* giving.

Constant warnings, reproofs, threats, and entreaties—as, “*Let that alone*”—“*Be quiet*”—“*How naughty you are!*” &c., all uttered in haste and irritation, are most pernicious. No fixed or definite moral improvement, but the reverse, results from this too common practice.

Watch destructiveness, manifested in fly and insect killing, and smashing and breaking, quarrelling, striking, &c. Never encourage revenge. Never allow a child to witness killing animals.

Counterwork secretiveness by exposing its manœuvres. Regulate notions of property—one’s own and another’s.

Never strike a child, and never teach it to strike again. Never tell a child to beat or threaten any animal or object. Corporeal correction may be avoided by judicious substitutes.

Set an example of cleanliness, order, punctuality, delicacy, politeness, and proper ease of manner. This is better than *teaching manners*, as it is called.

Inculcate early, and manifest in yourself, a delicate regard for the rights of others and their feelings, in contrast with selfish vanity, arrogance, and exclusive attention to one’s own ease, comfort, and gratification.

Prevent all indelicacies and slovenly habits at table—touching the utensils, stretching for what is wanted, sitting awkwardly, &c.

(Never use a particle of tobacco in presence of a child or otherwise. The practice is too filthy even to be named.)

Study early to gain a child’s confidence by judicious sympathy in its joys and sorrows. Have no concealment with it.

Govern by love, and not by fear: the contrast between children governed by the one and the other is truly instructive. Never forget that kindness is power with man and beast. *The Arab never strikes his horse.*

Cultivate truth, justice, and candor, in the child, and manifest them in yourself.

With a child whose firmness is apt to run into obstinacy, never contend: in doing so, you aggravate the feeling by manifesting the same feeling in yourself; and by further showing your combativeness, exciting the child’s opposition. Divert the child from the object, and put in activity its benevolence, justice, and reason.

Never frighten to obtain a child’s obedience: threats of hobgoblins, and all false terrors, are now universally exploded, as atrocities toward the young; death, fits, idiocy, insanity, have been the consequences. They are besides soon discovered to be falsehoods, and operate most immorally.

EARLIEST INTELLECTUAL EDUCATION.

Cultivate by exercise the five senses of *seeing, hearing, touching, smelling, tasting.*

Teach the child to observe forms, sizes, weights, colors, arrangements, and numbers.

Practise all a child’s knowing faculties on objects—feathers, shells, ribands, buttons, pictures of animals, &c.

Practise distinct articulation. If at four years of age a child has any defect, it ought to be systematically taught to pronounce correctly.

Let a child put its toy to another than the intended use, if it does not destroy it. This exercises invention.

Encourage construction, and furnish the materials, leaving ingenuity to work.

Accustom the child to find its own amusement. It is the most unprofitable slavery to be constantly finding amusement for it.

Remember that children love stories—the simpler the better; and delight to have them told again and again. Always give them a moral turn and character.

Be sparing of the marvellous ; exclude the terrible and horrible ; and utterly proscribe all ghost and witch stories.

Accustom children to reptiles, insects, &c. ; and prevent the foolish fear of these creatures which is often found in adults, and leads to the constant and most unnecessary destruction of them.

Induce a child to give attention, by presenting objects, and giving narratives which interest it. Do not tell it that it must give attention.

Avoid employing female servants as nurses who possess coarse habits and sentiments, or whose mode of speaking is coarse and indelicate.

No difference need at first be made between the rearing and training of male and female infants. Allow female children as they grow up to amuse themselves with dolls ; and in a similar manner encourage and regulate the amusements of boys.

(Accustom them to sleep separately at a very early age.)

INFANTILE DISEASES AND TREATMENT IN THE UNITED STATES.

The mortality among infants is much greater in the United States than in Europe.

The cause is to be found in the extreme vicissitudes of our climate, and certain errors of treatment.

A stimulating diet of animal food is often pernicious to infant constitutions.

Gluttony is too much encouraged among infants.

Improper food is the chief cause of fatality in teething.

During the first twelve or fourteen months, the mother's milk should constitute the sole nutriment of the child.

Autumn in this country is the most proper season for weaning a child.

More attention should be paid to the clothing of infants.

Fine Welsh flannel is the most suitable material for infant clothing during the spring, winter, and autumnal months.

Pure air is of the utmost importance. Pernicious consequences often result from inhaling the gas from anthracite coal. — MRS. BARWELL.

CHAPTER VI.

FACILITY OF LABOR.*

THE lamentable state of ignorance at present existing, among even the more educated and intelligent, in regard to the complicated machinery by which the functions of animal life are performed, necessarily produces constant deviation from the laws of Nature, the penalty of which is suffering. Woman, in a peculiar manner, has been hitherto excluded from that *self-knowledge* which is equally necessary to health and happiness in the physical as in the mental world. But the darkness induced for a time by barbarism, and followed by an over-fastidious delicacy, is fast being dispelled -- a few struggling rays of intelligence have penetrated the clouds -- and soon, we trust, they will brighten into the perfect day.

In particular is to be regretted her ignorance in regard to the nature of that delicate and peculiar relationship which exists between a mother and the being whose existence is as yet a part of her own, and whose future constitution, health, and character, are to be moulded in a great measure by the mother during the period of gestation. Nor is it the child alone who receives the benefit or endures the penalty,

* The substance of this article is compiled chiefly from the valuable little treatise of Mrs. Pendleton, of this city, entitled "Child Bearing without Pain."

as Nature's laws are violated or obeyed. To the mother it is a question of infinite moment, and will decide whether child-bearing shall continue to be, as it now is, but another name for suffering and torture, preceded by months of exhaustion and distress, or be rendered a natural and comparatively an easy process. Yes, startling as it may appear, this may become comparatively an easy process.

Dr. Dewees, professor of obstetrics in the Medical School of Pennsylvania, takes the ground that "pain in child-birth is a morbid symptom, the consequence of artificial modes of life and treatment; and could be avoided by appropriate habits and treatment." The words of Holy Writ, "In sorrow shalt thou bring forth," is believed by many sufficient to account for the prevalence of this suffering, but the more recent investigations into causes and effects have resulted happily in showing that, inasmuch as the laws of health are obeyed, there is a proportionate exemption.

Dr. Eberle remarks: "Child-bearing is a natural and not a morbid process; and in the facility with which healthy and regular-living women pass through it, we have abundant evidence that the Creator did not design it to be necessarily a time of suffering and danger." Nature has made abundant provision for the discharge of the function of parturition without danger, as is evident from the different structure of the male and female pelvis; nor have we any reason to suppose parturition, in a healthy system, a more hazardous process than digestion or respiration. If this be indeed true—if mothers may escape these months of wretchedness—if the pain of labor may be not only lessened in intensity, but abridged from forty-eight hours to two or even one, as has been known to be the case—the earnest question will be asked from the thousands who groan under existing evils, "What, then, can be done? Point us the remedy." Gladly will we mark the road—gladly show the way of escape.

In introducing the few simple means by which this desirable end is to be attained, we take the liberty of extracting from an excellent work on the subject, some remarks from the account of an experiment for securing child-birth with safety and little pain, related by S. Rowbotham, author of an essay on "Human Parturition," &c. "While reading the article 'Age,'" says Mr. Rowbotham, "in the 'Penny Cyclopædia,' published by the 'Society for the Diffusion of Useful Knowledge,' I was forcibly impressed with this paragraph:—

"When first the human embryo becomes distinctly visible, it is almost wholly fluid, consisting only of a soft gelatinous pulp. In this gelatinous pulp, solid substances are formed, which gradually increase and are fashioned into organs. These organs, in their rudimental state, are soft and tender, but, in progress of their development, constantly acquiring a greater number of solid particles, the adhesion of which progressively increases, the organs at length become dense and firm. As the soft solids augment in bulk and density, *bony particles* are deposited, sparingly at first, and in detached masses, but accumulating by degrees; these, too, are at length fashioned into distinct osseous structures, which, extending in every direction, until they unite at every point, ultimately form the connecting bony framework of the system. This bony fabric, like the soft solids, tender and yielding at first, becomes by degrees firm and resisting.'"

Mr. Rowbotham reasoned from this that the firmness and density of the *fœtus* depends upon the amount of the *bony matter* deposited, or entering into its constitution; and, as the *fœtus* is built up, nourished, and supported by the mother's blood, the mother's blood must be the source of bony matter which hardens and consolidates the *fœtus*. But blood is derived from food and drink; consequently, if different kinds of food and drink contain different proportions of this bony matter, it follows, that, according to the kind of food which the mother subsists upon during pregnancy, that is to say, according to the amount of earthy or bony matter existing in it, will be the amount existing in or entering into combination with her blood; and consequently will the *fœtus* be more or less firm and resisting.

Chymical investigations have taught us that "the phosphate of lime and magnesia contained in food, and thus conveyed into the blood, can not be converted into cellular tissue, neither can they be consumed by the respiratory organs, but a portion of them is deposited in the form of bone." We see hence the propriety of Mr. Rowbotham's conclusion that the diet of pregnant women should consist of food containing less of the ossifying ingredients, as thereby the ossification of the *fœtus* would be retarded—greatly

facilitating the process of parturition. Care should be taken, however, to avoid the extreme of this course, lest, from want of stamina in the mother, she inflict upon her child all the evils arising from a defective or weakly-organized constitution.

Attention to diet, then, is a fundamental principle in securing to the mother a mitigation of the pains of labor, and giving the child a strong and healthy constitution. "A notion is very prevalent," says the celebrated Dr. Combe, "that an unusual supply of nourishing food is required during pregnancy, on account of the rapid development of the new being in the maternal womb. In some, in which the general health, digestive powers, and appetite, improve during gestation, an increased allowance of food becomes necessary, and is productive of much advantage. But in the majority of cases, when no such improvement takes place, and the appetite is already more vigorous than the powers of digestion, nothing but mischief can follow from increased eating." — "It is true that substance is expended on the development of the infant being in the mother's womb, but Nature herself has provided for that demand, by a suppression of the periodical discharge, to which they are at other times subject, and which ceases altogether when the age of child-bearing is past; and therefore during pregnancy, when the health is good, and the appetite natural, there is no need whatever of increasing the quantity or quality of the food which is found by experiment to agree with the constitution, and nothing but harm can result from attempting to support the system by too nutritious diet."

"The fœtus is duly nourished only," continues the same author, "when the proper food in itself is also properly digested: if the digestion be imperfect, no food, however nutritious, will afford a healthy sustenance. Many mothers in the higher classes give birth to feeble and badly-developed children, from inattention to this fact. Fond of indulging in every luxury, they eat unseasonably and largely, until the powers of the stomach are exhausted, and digestion becomes so much impaired, that food ceases to be nutritious. Morally considered, it is as culpable on her part to starve the infant before birth, by voluntarily impairing her own powers of nourishing it, as by directly refusing it food after it is born."

Dr. Eberle remarks: "There is no period of life at which it is of so much consequence to observe moderation and simplicity of diet, and avoid the use of heating food and stimulants, as during pregnancy. Not only is the general system then unusually susceptible of impressions, and disordered by slight causes, but in nervous constitutions the stomach is the seat of peculiar irritability, accompanied by a craving and capricious appetite, to which it requires much good sense and self-denial on the part of the parent to refrain from giving way."

On the subject of diet, Dr. Gilman, professor of obstetrics in the New York College of Physicians and Surgeons, says: "This should be light, not very nutritious, and rather laxative. Nature, in most cases, points out this course: the appetite is for fruits, vegetables, and the lighter meats, while gross food, such as goose, pork, fat, &c., are loathsome. Follow here the dictates of nature: let the patient take vegetables, and especially fruits, freely, and abstain from gross articles, from highly-seasoned meats, and from stimulating drinks."

Next to diet, or rather of equal importance with it, is the necessity of exercise taken freely and judiciously. "During pregnancy, the great aim for the sake of both parent and child should be, to sustain the general health in its highest state of efficiency; and, in order to attain this, the mother should pursue her usual avocations and mode of life, provided these be compatible with the laws of health. Regular daily exercise, cheerful occupation and society, moderate diet, pure air, early hours, clothing suitable to the season, and healthy activity of the skin, are all more essential than ever, because now the permanent welfare of another being is at stake, in addition to that of the mother. But any of these, carried to excess, may become a source of danger to both mother and child. Dancing, riding, and travelling over rough roads, have brought on abortion." The same writer remarks: "In regard to regular exercise in the open air, the greatest attention is necessary on the part of the mother. Nothing contributes more essentially than this to a sound state of health during gestation, and a safe and easy recovery after delivery. With ordinary care, walking may be continued almost to the last hour, and with excellent effect upon all the functions."

Dr. Gilman, speaking of exercise, says: "This should be strongly insisted upon; none of the means

of preserving the health of pregnant women are more valuable than this. It should always be taken in the open air, and carried so far as to produce fatigue, but not exhaustion. As to the kind of exercise, walking is best ; riding in an open carriage will do well."

Cleanliness and fresh air are important aids to health at all times, and doubly necessary during gestation. Hence the propriety of having recourse to the tepid bath every few days, especially in the case of females in the middling and higher classes, in whom the nervous system is unusually excitable.

CHAPTER VII.

MISCELLANEOUS SUBJECTS.

SECTION I.

EARLY MARRIAGES.

NATURE has intended that all the parts of the system, both in the human and in the lower order of animals, shall be fully formed and developed before they begin to propagate their species ; and if the organs of reproduction are thus prematurely used before that period, there will be a violation of Nature's laws, resulting in injury to the parents as well as to their offspring. This is a well-known fact among farmers, and they are careful to keep the female from the male until a suitable age ; otherwise the animal may perish in delivery, or its growth be much retarded. The same law holds good in relation to the human species. Labor becomes more painful or dangerous in early marriages, and a full development and growth of the system is arrested. Not only so, but a much more numerous offspring is entailed, which, in the present state of society, often becomes a fruitful source of suffering. All this usually arises in consequence of the sexes indulging in those morbid, premature, and excited feelings, peculiar to a very early age, and which should be guarded against, as a means of avoiding many physical and mental evils, and promoting their happiness. It was an excellent law of the ancient Germans, forbidding marriages under the age of twenty-five in the male and twenty in the female : their offspring were vigorous.

SECTION II.

PROCREATING SEXES AT CHOICE.

..... "HERE presents itself the great question which has for a long time agitated the schools—I mean that of generating or procreating males and females. Hippocrates, in his forty-eighth aphorism, section fifth, tells us—'The male fetuses are on the right side, and the female on the left side.' The commentators have added—'If the first step the woman makes, standing up, is of the right foot ; if, being seated, she leans rather the right hand on the right knee ; if the right eye is more vivid, the right nipple more enlarged, all her motions more lively and ready on the right side, with all the other symptoms of pregnancy accompanying, it is a sign she bears a male.' Hence there is a means to fecundate the uterus accordingly, which the accoucheur Millot, of Paris, relates in his '*Androgenesy*,' after thirty years' experience. The means he proposes is easy, and every husband can use it at choice : To procreate a boy, the husband must lie on the right side of the wife ; the bed making an inclined plane, the right ovary will be fecundated in that position. By sleeping on the left side, the prolific spirit will instil itself into the

left ovary, and she will procreate a girl, by means of the paternal degree of heat and stimulus communicated to the ovary or human egg. Rubbing the side also will add to the stimulus of the contact of the two spouses." The above statement has proved to be correct by the translator in a certain number of cases examined. — DR. ZENDER'S "*Mégalanthropogénésie*" (translated by DR. ROBERTS, of Paris).

SECTION III.

PHYSICAL, MORAL, AND INTELLECTUAL TRAITS TRANSMISSIBLE.

It is very evident to the observing mind that physical, moral, and intellectual traits of character and constitution, may be transmitted from the parent to the offspring. This may be seen not only in individual but even in national character. Hence we know the inhabitants of different nations at the first view of them, from the peculiarities of physiognomy and muscular development, as well as by their intellectual and moral peculiarities. The aborigines of this country are noted for their extraordinary muscular development; the Germans for their general integrity of character: the Spaniards and the Portuguese are noted for the opposite traits. So, likewise, the great enterprise, energy, and versatility of character, displayed by the Americans, is attributable to the constant influx and fusion of different races of people.

The same law extends to the animal creation. It is a well-known fact that the cattle-breeder recognises this principle, and improves his stock by increasing valuable traits of size, beauty, symmetry, and even disposition. In this way, some small, defective native animals, by judicious crosses, have become so much improved, that the original stock is no longer known. Nor does the same law stop here; it extends to the vegetable creation: and all our fruits and garden-productions have been completely changed for the better by improvement in cultivation. This perfection in the three kingdoms of nature is the result of fixed and well-known laws. In the animal, if it be small, the defect is removed by crossing it with a larger one; if one part be deficient in symmetry, it is removed in a similar manner. If the disposition be vicious, the offspring becomes more docile by the same means. In applying this principle to our race, no person should marry who labors under any serious disease: if the individual be afflicted with venereal complaints, scrofula, or is predisposed to consumption (or if it has proved fatal to several in the family), there is the same objection. If either party be deficient in intellect, or an idiot, it should be a barrier to matrimonial alliance; if either possess any very bad constitutional trait of character, particularly if it has existed in the parents, the same objection prevails. If, then, in a word, there be one radical defect, in body, mind, or morals, it will be transmitted to the offspring in a greater or less degree: and are not those criminal who thus, by marriage, inflict pain and misery upon their children? The influence of impression upon the *fœtus in utero* from the mother is very great. A fit of anger before nursing causes great distress to the child; exposure to cold or other deviations are communicated immediately to the infant; and it is in this manner that either good or injurious impressions are conveyed during pregnancy as well as before. A rule of great practical importance is, that during this period, if we wish the *fœtus* to be born in a good condition in all respects, the mother must obey the laws of health and morality. That the mother gives to her child its physical constitution, regulated by her own regard to its health during gestation, the following letter from the interesting work on child-birth, before quoted, will prove:—

"I was," says the writer, "married at the age of twenty-five, inheriting from both my parents a most vigorous constitution. My husband was four years my senior, and alike blessed with most perfect health. But we started wrong, after all, for we were both determined to be rich, let what would come. We occupied a large farm; and I, in my eagerness to amass wealth, which has been a canker to my happiness, would never employ help for a day, frequently doing all the labor for a family of twenty during the period of gestation. My first children were twins. My living at the time was what is commonly called the plain living of farmers, but which I now consider as much too luxurious for health. Previous to my accouchement, a cutaneous eruption appeared on my face, hands, and neck, together with swelling of

joints. This I looked upon as the effect of heat, which would soon pass off; but what was my disappointment at the birth of my babes, to have presented to me two emaciated little beings, covered with the same eruption, which proved to be a scrofula induced by heating my blood, with wrong living! I had most ardently desired children, and my love of riches gave way before my maternal feelings: but in less than four months both the little sufferers were carried to their resting-place. I regarded myself as stricken of God; I sought to submit myself to my trying fate as a Christian, for I did not regard myself as having anything to do with my affliction. A third, fourth, and fifth child followed, diseased in the same way, and only lingered a short period. At length my desires were gratified in everything except living children: I wept and prayed much for a child that might bless our old age.

“At length the illness of a beloved parent called me to a different scene, and during almost the entire period of my pregnancy with my sixth child I was occupied with her care. Being no longer actively engaged, having scarcely sufficient exercise for my health, my mind turned naturally to the investigation of causes that had co-operated to produce such painful results, if causes there were. ‘Does God,’ I asked, ‘arbitrarily punish us in this world for infringements of the moral law? If so, of what use is the atonement, or death of Christ?’ Then first dawned upon my mind the belief that there were natural as well as moral laws, given to govern us, and that an infringement of them would be followed by a just punishment. The period of parturition arrived. Conceive, if you can, the joy and gratitude of my heart, to find myself the mother of a fair and beautiful boy, who still lives to bless and comfort me: but although he lives, and the three daughters that followed him, yet they too partake of the feeble constitution which I entailed upon them; for my health had become greatly impaired during my struggle after riches.”

Many similar cases might be adduced, where mothers have had their moral sense awakened to the importance of the subject, and following the path of duty, have reaped blessings to themselves and their offspring.

SECTION IV.

SEXUAL INTERCOURSE, ONANISM, VENERY, ETC.

THIS subject, from the nature of it, is not generally treated of by writers on health. But none is more important, as it involves consequences of the most serious kind. The semen is the most subtile, vital, and ethereal part of the body: it contributes to the support of the nerves, as well as the reproduction of the species; its evacuation is by no means necessary, and, when retained, adds greater strength to the system. The emission of the semen enfeebles the body more than the loss of *twenty times the same quantity of blood*, and more than violent cathartics, emetics, &c. Hence excess of this nature produces a debilitating effect on the whole nervous system — on both body and mind. It is founded on the observations of the ablest physiologists that the greater part of this refined fluid is reabsorbed and mixed with the blood, of which it constitutes the most rarefied and volatile part; and it imparts to the body peculiar sprightliness, vivacity, and vigor. These beneficial effects can not be produced if the semen be wantonly and imprudently wasted. Besides, the emission of it is accompanied with lassitude and relaxation, and often with great nervous depression. It should therefore never be evacuated except in a state of superfluity, and even then never unnaturally. Perhaps the best criterion for married persons is this: *never indulge in the propensity while it can well be avoided*, for the same reason that we should never eat till we are hungry; any deviation from this rule will be attended directly or indirectly with debilitating effects, especially with the weak and nervous. Persons should never practise masturbation or onanism under any pretence, except they wish to expose or ruin their health and morals. By these terms is meant the emission of semen artificially, and which prevails among both sexes to a most fearful extent. Obey the injunction of the apostle: “Flee youthful lusts.” This doctrine is agreeable to the laws of physiology or nature, as well as the law of God. Emitting the semen artificially by the too common practice of onanism, lays the foundation for many incurable complaints, and causes more bad health than even physicians

are aware of. It has been shown, by reports of lunatic asylums, that it often causes insanity in both sexes. "The fact that the ceremony of marriage has been performed, will not save people from the consequence of venereal excesses. The laws of our nature remain the same; and, if violated, we must suffer the consequences. Hundreds and thousands are hurried into a premature grave, or made wretched while they live, by diseases induced by venereal excesses, with no knowledge of their causes." The practice of self-pollution pervades all ranks, male and female. Professed Christians are often among its victims. "Some time since," says Mrs. Mary S. Gove, "I became acquainted with a lovely and intellectual young man, who was a student in one of our theological seminaries. His health became so poor, that he was obliged to leave the seminary and return to his friends. I saw him lose his reason and become a maniac. I was satisfied, from all the symptoms in the case, that this sin was the cause of his wretched condition. He died without recovering his reason: and a friend of his, who was in the seminary with him, told me, after his decease, that he was indeed a victim of SOLITARY VICE; that it caused his death."

A short time since I was conversing with a physician who seemed to feel deeply on the subject: "But," said he, "what can be done? I dare not offend parents by telling them the habits of their children. Only the other day, I was called to a youth who was destroying himself by this practice, but I dared not mention it. The parents would have been very angry if I had." Dr. S. B. Woodward, late superintendent of the asylum for the insane at Worcester, has the following remarks on this practice: "For the last four years, it has fallen to my lot to witness, examine, and mark, the progress of from ten to twenty-five cases daily, who have been the victims of this debasing habit, and I aver that no cause whatever, which operates on the human system, prostrates all its energies, *mental*, *moral*, and *physical*, to an equal extent. I have seen more cases of idiocy from this cause alone, than from all the other causes of insanity." Consumptions, spinal distortions, weak and painful eyes, weak stomachs, nervous headaches, and a host of other diseases, mark its influence upon the one—loss of memory and the power of application, insanity, and idiotism, show its devastating effects upon the other. It is equally opposed to moral purity and mental vigor. The evil is common; its danger little known. Let the young beware of it; and those who are in the way of danger, abandon it for ever! See Tissot, Graham's "Advice to Young Men," &c.

The best preventive is abstinence, diet, and regimen—to avoid all animal food and stimulants, and to use vegetables and fruits only. High-living excites venery, and leads directly to sensuality.

SECTION V.

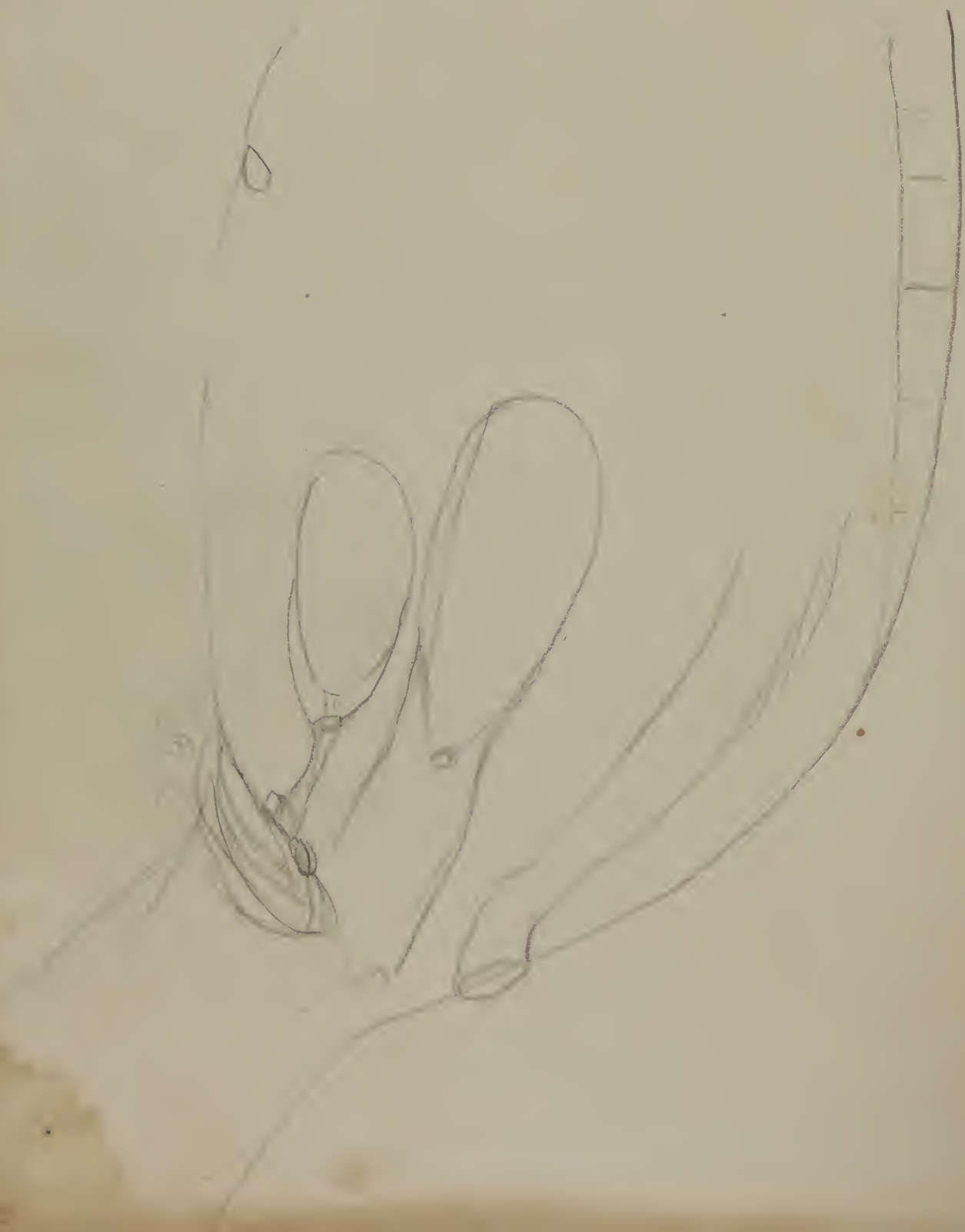
FALSE DELICACY AND NOTIONS ON ANATOMY AND PHYSIOLOGY.

SOME persons think it wrong to exhibit plates and models illustrating different parts of the female, particularly to youth. But this is an improper view of the subject: it is the result of false delicacy, and arises from ignorance. The more we attempt to conceal from children or others, the greater is their curiosity, and the stronger their desire to gratify it unobserved. Such is the law of perverted nature. The best way is to inculcate no secrecy, by restricting a knowledge of any part of the system, but allow every part to be studied, and let children be taught very little reserve. It is not the most fastidious who are the most virtuous, and we should suspect such much sooner than others. It is only by an early study of physiology that the mind can be disenthralled from the false notions which are now so common on these subjects. An excellent method to curb the venereal appetite, and to elevate and refine the character, is, to study well every part of the human system, and recognise the Divine Architect in its wonderful mechanism. "To the pure," says the apostle, "all things are pure." During my popular lectures on midwifery in Philadelphia, a sensible lady, after hearing them, made the following pertinent observation: "I am glad that the time has come when people are not ashamed of God's work."

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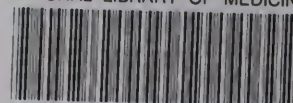
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